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Vol. 1058 Number 3 260

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September 17, 1985

U.S. DEPARTMENT OF COMMERCE

Patent and Trademark Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

September 17, 1985 Volume 1058 Number 3

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GENERAL INFORMATION concerning TRADEMARKS.

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of May 7, 1985 and was published in the *Official Gazette* at 1053 O.G. 42 on Apr. 16, 1985.

International PCT fees were changed effective May 28, 1985 and were announced in the *Official Gazette* at 1053 O.G. 42 on Apr. 16, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	620.00
International fees	
Basic fee (first 30 pages)	230.00
Basic Supplemental fee (for each page over 30)	4.00
Designation fee (for the first 10 national or regional offices)	55.00
Designation fee for 11th and subsequent designations	No charge

DONALD J. QUIGG,
Acting Commissioner of Patents and Trademarks.

May 7, 1985.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), effective Nov. 1, 1984. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on September 14, 1982 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Plant Patents	None
Utility Patents	4,348,774 through 4,349,919

Reissue Patents based on the above identified patents.

No maintenance fees are required for design patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 200.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 200.00
By other than a small entity . . . . . $ 400.00"

The amounts of the surcharges, effective Nov. 1, 1984, are set forth in 37 CFR 1.20(k)-(m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 100.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 50.00
By other than a small entity . . . . . $ 100.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee on a patent based on an application filed on or after Aug. 27, 1982, where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,311,076, Re. S.N. 758,654, Filed May 24, 1984, Cl. 84/001, ELECTRONIC MUSICAL INSTRUMENT WITH HARMONY GENERATION, Thomas E. Rucktenwald, et al., Owner of Record: *Kimball International, Inc., Jasper, Ind.*, Attorney or Agent: Albert L. Jeffers, et al., Ex. Gp.: 217

4,354,499, Re. S.N. 661,718, Filed Oct. 17, 1984, Cl. 128/653, APPARATUS AND METHOD FOR NUCLEAR MAGNETIC RESONANCE SCANNING

AND MAPPING, Raymond V. Damadian, Owner of Record: *Inventor,* Attorney or Agent: Richard C. Conover, Ex. Gp.: 335

4,395,197, Re. S.N. 759,440, Filed July 26, 1985, Cl. 415/211, CENTRIFUGAL FLUID MACHINE, Yoichi Yoshinaga, et al., Owner of Record: *Hitachi, Ltd., Tokyo, Japan,* Attorney or Agent: Donald R. Antonelli, et al., Ex. Gp.: 341

4,436,785, Re. S.N. 758,753, Filed July 25, 1985, Cl. 428/427, SILVER-FILLED GLASS, Raymond L. Dietz, et al., Owner of Record: *Johnson Matthey, Inc., Malvern, Pa.,* Attorney or Agent: John W. Malley, et al., Ex. Gp.: 154

4,443,480, Re. S.N. 758,201, Filed July 23, 1985, Cl. 424/352, ARTIFICIAL BLOOD AND OTHER GAS TRANSPORT AGENTS, Leland C. Clark, Jr., Owner of Record: *Children's Hospital Research Foundation, a Division of Children's Hospital Medical Center, Cincinnati, Ohio,* Attorney or Agent: Herbert C. Brinkman, et al., Ex. Gp.: 125

4,476,283, Re. S.N. 759,131, Filed July 25, 1985, Cl. 525/053, GRAFT COPOLYMERIZATION PROCESS, Paul G. Anderson, Owner of Record: *Dow Chemical Co., Midland, Mich.,* Attorney or Agent: Douglas N. Deline, et al., Ex. Gp.: 151

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,430,328, Reexam. No. 90/000,836, Requested: Aug. 16, 1985, Cl. 424/177, RUMINANT LACTATION IMPROVEMENT, Curtis C. Scheifinger, Owner of Record: *Eli Lilly and Co., Indianapolis, Ind.,* Attorney or Agent: Charles W. Ashbrook, Ex. Gp.: 125, Requester: SmithKline Beckman Corp., Philadelphia, Pa.

4,486,378, Reexam. No. 90/000,838, Requested: Aug. 19, 1985, Cl. 264/512, PLASTIC BOTTLES AND PROCESS FOR PREPARATION THEREOF, Sadao Hirata, et al., Owner of Record: *Toyo Seikan Kaisha, Ltd., Tokyo, Japan,* Attorney or Agent: Sherman and Shalloway, Ex. Gp.: 137, Requester: Wood, Herron, et al., Cincinnati, Ohio

Errata

The following registration numbers, listed in the "Trademark Registrations Issued" section of the following Trademark Official Gazettes were listed inadvertently:

1,328,632	TM 206	Apr. 2, 1985
1,329,576	TM 427	Apr. 9, 1985
1,332,246	TM 876	Apr. 23, 1985
1,332,455	TM 880	Apr. 23, 1985
1,342,084	TM 198	June 18, 1985
1,342,419	TM 204	June 18, 1985
1,343,079	TM 217	June 18, 1985
1,343,106	TM 218	June 18, 1985

Consequently, the certificates of registration bearing the above-identified registration numbers were not issued on the date indicated, and the registration numbers have been vacated.

PATRICIA M. DAVIS,
Administrator for Trademark Operations.

Aug. 16, 1985.

U.S. GOVERNMENT-OWNED INVENTIONS
Notice of Availability for Licensing

The inventions listed below are owned by agencies of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve expeditious commercialization of results of federally funded research and development. Foreign patents are filed on selected inventions to extend market coverage for U.S. companies and may also be available for licensing.

Technical and licensing information on specific inventions may be obtained by writing to:

Office of Federal Patent Licensing
U.S. Department of Commerce
P.O. Box 1423
Springfield, Va. 22151

Please cite the number and title of inventions of interest.

DOUGLAS J. CAMPION,
Office of Federal Patent Licensing National Technical Information Service U.S. Department of Commerce.

DEPARTMENT OF AGRICULTURE

SN 6-423,402 (4,526,586). MICROEMULSIONS FROM VEGETABLE OIL AND AQUEOUS ALCOHOL WITH 1-BUTANOL SURFACTANT AS ALTERNATIVE FUEL FOR DIESEL ENGINES.

SN 6-474,996 (4,527,000). DIOLEFIN PHEROMONE MIMICS AS DISRUPTANTS OF SEXUAL COMMUNICATION IN INSECTS.

SN 6-749,905. PROCESS TO IMPART SMOOTH-DRY AND FLAME RETARDANT PROPERTIES TO SYNTHETIC-CELLULOSIC BLENDED FABRICS.

SN 6-749,906. PREPARATION OF PELLETS CONTAINING FUNGI AND NUTRIENT FOR CONTROL OF SOILBORNE PLANT PATHOGENS.

DEPARTMENT OF COMMERCE

SN 6-436,124 (4,525,067). TWIN-ETALON SCANNING SPECTROMETER.

DEPARTMENT OF HEALTH AND HUMAN SERVICES

SN 6-683,428. METAPHIT, A SPECIFIC ACYLATING AGENT FOR THE (^{3}H) PHENCYLIDINE.

SN 6-749,442. PURIFICATION OF UROMODULIN.

DEPARTMENT OF THE ARMY

SN 6-404,783 (4,524,675). DETACHABLY CONNECTABLE SIGHT ASSEMBLY FOR A SMALL DEFENSE WEAPON.

SN 6-460,323 (4,524,674). MILITARY VEHICLES.

SN 6-465,851 (4,527,081). OVERSHOOT PREDRIVEN SEMI-ASYNCHRONOUS DRIVER.

SN 6-544,764 (4,527,137). EVANESCENT RESONATOR FREQUENCY MULTIPLIER.

SN 6-544,770 (4,526,881). METHOD OF PRETREATING CARBON BLACK POWDER TO IMPROVE CATHODE PERFORMANCE AND LITHIUM SULFURYL CHLORIDE CELL INCLUDING THE PRETREATED CARBON BLACK POWDER.

SN 6-571,301 (4,527,276). DIGITAL PULSE POSITION MODULATION COMMUNICATIONS SYSTEM WITH THRESHOLD EXTENSION.
SN 6-576,992 (4,527,063). SOLID STATE NUCLEAR RADIATION DETECTOR CIRCUIT WITH CONSTANT SENSITIVITY.

Adverse Decisions in Interference

In the designated interference involving the indicated claims of the following patents, final decision having been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,504,182, Vito F. Pizzurro, Harvey E. Fiala, Louis A. De Bottari, Shiro A. Uchizono and Lowell M. Rubin, OPTICAL COMMUNICATION SYSTEM, Interference No. 100,888, decided Dec. 21, 1984, claim 38.

Patent No. 3,585,149, Anthony E. Vassiliades, Edward F. Nauman and Shrenik Shroff, MICROCAPSULAR OPACIFIER SYSTEM, Interference No. 100,953, decided Jan. 25, 1985, claims1 & 8.

Patent No. 3,669,899, Anthony E. Vassiliades, Edward F. Nauman and Shrenik Shroff, MICROCAPSULAR OPACIFIER SYSTEM, Interference No. 100,954, decided Jan. 25, 1985, claims 1 & 25.

Patent No. 3,991,605, Joachim Reuland, METHOD AND APPARATUS FOR TESTING THE WRAPPERS OF CIGARETTES AND THE LIKE, Interference No. 100,795, decided Feb. 24, 1984, claims 1 & 13.

Patent No. 4,127,531, David Coy and Abba J. Kastin, NOVEL HEXAPEPTIDES, INTERMEDIATES THEREFOR, AND COMPOSITIONS AND METHODS EMPLOYING SAID HEXAPEPTIDES, Interference No. 101,284, decided Mar. 21, 1985, claims 1, 2, 7, 11 & 13-20.

Patent No. 4,167,965, Richard D. Rogers, INTEGRAL WATER-REFRIGERANT-AIR HEAT EXCHANGE SYSTEM, Interference No. 100,901, decided Dec. 31, 1984, claims 1-4, 6 & 11.

Patent No. 4,234,739, James M. Photis and Fred S. Eiseman and Sidney M. Gister, METHOD FOR PREPARING GLYOXYLIC ACIDS AND DERIVATIVES THEREOF, Interference No. 100,858, decided Dec. 17, 1984, claims 6, & 13-16.

Patent No. 4,254,119, Yoshio Hamashima and Wataru Nagata, 3-UNSUBSTITUTED-3-CEPHEM COMPOUNDS, Interference No. 101,294, decided Mar. 27, 1985, claims 1-7, 14, 22 & 24.

Patent No. 4,305,123, Marek V. T. Scibor-Rylski, PROGRAMMABLE CONTROLLER FOR THE MECHANISM OF AN INDUSTRIAL TRUCK, Interference No. 101,109, decided Feb. 27, 1985, claim 7.

Patent No. 4,381,324, Chester W. Ellingson, Jr., COUPLING MEMBER FOR FLOOR COVERING SECTIONS, Interference No. 101,219, decided Mar. 18, 1985, claims 1-4.

NANNIE B. HENRY,
Deputy Clerk,
Board of Patent Appeals and Interferences.

PATENT NOTICES

Certificates of Correction for the Week of Sept. 17, 1985

B1. 4,358,573	4,481,435	4,500,680	4,511,406
D. 277,550	4,481,843	4,500,759	4,511,728
4,135,923	4,482,384	4,500,974	4,511,975
4,263,009	4,482,604	4,500,976	4,511,997
4,290,121	4,482,669	4,500,990	4,512,058
4,365,370	4,482,726	4,501,013	4,512,250
4,388,129	4,483,094	4,501,321	4,512,418
4,389,741	4,485,204	4,502,108	4,512,804
4,392,234	4,485,461	4,503,133	4,513,007
4,396,532	4,485,826	4,503,227	4,513,656
4,400,163	4,486,224	4,503,674	4,514,268
4,403,965	4,486,321	4,503,682	4,514,422
4,412,986	4,486,565	4,504,021	4,515,043
4,415,694	4,488,242	4,504,031	4,515,304
4,417,045	4,488,534	4,504,521	4,515,616
4,424,375	4,489,246	4,505,535	4,515,730
4,428,874	4,490,634	4,505,815	4,515,737
4,430,609	4,490,830	4,505,885	4,516,030
4,431,651	4,491,632	4,505,982	4,516,052
4,438,069	4,492,293	4,506,073	4,516,368
4,451,859	4,492,340	4,506,307	4,516,785
4,452,602	4,493,096	4,506,331	4,517,179
4,453,099	4,493,169	4,507,115	4,517,191
4,457,164	4,493,411	4,507,265	4,517,345
4,459,640	4,493,745	4,507,519	4,517,663
4,460,879	4,494,077	4,507,695	4,517,901
4,460,991	4,494,359	4,507,729	4,518,842
4,464,366	4,495,048	4,508,538	4,519,136
4,465,629	4,495,084	4,508,672	4,520,118
4,465,964	4,495,118	4,508,689	4,520,439
4,466,006	4,495,295	4,508,764	4,520,458
4,467,251	4,495,636	4,508,979	4,521,116
4,467,899	4,495,829	4,509,290	4,521,271
4,470,787	4,496,481	4,509,322	4,521,395
4,471,391	4,496,893	4,509,831	4,521,488
4,473,891	4,497,133	4,509,872	4,521,828
4,473,895	4,497,661	4,509,874	4,521,975
4,474,668	4,497,904	4,509,883	4,522,093
4,476,913	4,497,962	4,509,925	4,522,250
4,476,998	4,498,022	4,509,956	4,522,538
4,477,043	4,498,934	4,510,311	4,523,203
4,477,785	4,499,219	4,510,568	4,523,989
4,478,051	4,500,293	4,510,735	4,525,368
4,478,252	4,500,457	4,511,287	4,525,666
4,480,285	4,500,585	4,511,369	4,528,330

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
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Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
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Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware Library	(302) 451-2238
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
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	Boston Public Library	(617) 536-5400 Ext. 265
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	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
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	St. Louis Public Library	(314) 241-2288 Ext. 390
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New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
	Nashville: Vanderbilt University Library	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
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Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

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*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF August 3, 1985

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	12-28-83
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	6-01-83
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-12-84
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	11-30-83
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	4-11-83
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	3-21-83
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	9-17-82
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—E. E. KUBASIEWICZ, Director	11-29-83
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	4-30-82
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	4-19-83
DESIGN, GROUP 290—K. L. CAGE, Director	2-23-83
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	7-12-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	8-29-83
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	3-10-83
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	4-15-83
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	4-02-84

Expiration of patents: The patents within the range of numbers indicated below expire during July 1985, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,395,406 to 3,399,405, inclusive

Plant Patents ..... Numbers 2,825 to 2,829 inclusive

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

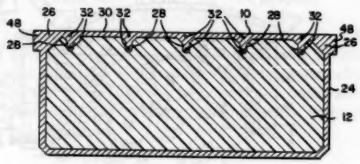
Re. 31,984
CONCRETE MARINE FLOAT AND METHOD OF FABRICATING

Wesley W. Sluys, Bellingham, Wash., assignor to Builders Concrete, Inc., Bellingham, Wash.

Original No. 4,265,193, dated May 5, 1981, Ser. No. 57,594, Jul. 16, 1979. Application for reissue May 5, 1983, Ser. No. 491,937

Int. Cl.⁴ B63B *35/44*

U.S. Cl. 114—267 **14 Claims**



4. A method of fabricating a marine float, comprising:

pouring a layer of concrete into a form having the shape of a rectangular prism such that said concrete covers the bottom of said form;

placing a core of buoyant foam having the shape of a rectangular prism on said poured layer of concrete with the sides of said core positioned apart from the sides of said form by a predetermined distance;

forming a plurality of transverse [and longitudinal] grooves *and at least one longitudinal groove* in the upper surface of said core;

placing a tubular conduit [having a length substantially equal to the inner transverse dimension of said form] in at least some of said transverse grooves before said concrete is poured over the upper surface of said core;

pouring concrete into said form such that said concrete fills the space between said core and said form, and said concrete covers the upper surface of said core, thereby filling said grooves; and

removing said concrete and core from said form.

Re. 31,985
AQUEOUS DISPERSION TYPE THERMOSETTING COATING COMPOSITION

Masaaki Hayashi, Tokyo; Hiroharu Sasaki, Yamato, and Kazuyoshi Tsuneta, Yokohama, all of Japan, assignors to Dai Nippon Toryo Co, Ltd., Japan

Original No. 4,296,014, dated Oct. 20, 1981, Ser. No. 104,447, Dec. 17, 1979. Application for reissue Aug. 11, 1982, Ser. No. 407,284

Claims priority, application Japan, Oct. 26, 1978, 53-132000; Dec. 19, 1978, 53-156653; Dec. 26, 1978, 53-164179

Int. Cl.⁴ C08L *67/06*

U.S. Cl. 523—501 **30 Claims**

1. An aqueous dispersion type thermosetting coating composition comprising (A) fine [thermosetting] water-insoluble *thermosetting* resin particles consisting essentially of (a) a preformed polyester-modified vinyl resin having a hydroxyl value of 30 to 200, which is formed by solution graft-polymerizing (i) an unsaturated polyester resin formed by [reaction between an] *reacting 1–10% by weight of at least one* α,β-unsaturated dicarboxylic acid, *at least one carboxylic acid component selected from the group consisting of phthalic acid, phthalic anhydride, isophthalic acid, isophthalic anhydride, trimellitic acid, trimellitic anhydride, pyromellitic acid, pyromellitic anhydride, tetrahydrophthalic acid, tetrahydrophthalic anhydride, hexahydrophthalic acid, hexahydrophthalic anhydride, methylhexahydrophthalic acid, methylhexahydrophthalic anhydride, 3,6-endomethylene-tetrahydrophthalic anhydride, succinic acid, succinic anhydride, adipic acid, sebacic acid, benzoic acid and p-tert-butyl-benzoic acid* and [a] *at least one* polyhydric alcohol, with (ii) at least one α,β-monoethylenically unsaturated monomer, and optionally with (iii) a phosphoric acid group-containing α,β-monoethylenically unsaturated monomer, and (b) a performed cross-linkable copolymer resin derived from a monomer mixture comprising (iv) an N-alkoxymethylated monomer of an α,β-monoethylenically unsaturated carboxylic acid amide and (ii) at least one α,β-monoethylenically unsaturated monomer, (B) a surface active agent and/or a thickener, and (C) a necessary amount of water.

Re. 31,986
MANUFACTURE OF ORGANIC PIGMENTS

Wolfgang Lotsch, Beindersheim, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Fed. Rep. of Germany

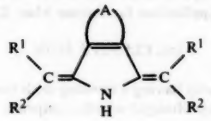
Original No. 4,166,179, dated Aug. 28, 1979, Ser. No. 797,319, May 16, 1977. Application for reissue May 2, 1980, Ser. No. 146,146

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1976, 2628409

Int. Cl.⁴ C09B *57/00*

U.S. Cl. 544—296 **17 Claims**

1. A process for the manufacture of an easily dispersed colorant of the formula

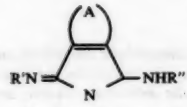


wherein:

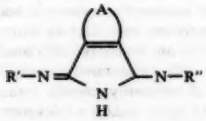
is the radical of barbituric acid, N-methylbarbituric acid, N,N'-dimethylbarbituric acid, N,N'-diphenylbarbituric acid, 2-thiobarbituric acid or 2-iminobarbituric acid; and

is o-phenylene, 1,2- or 2,3-naphthylene, or the divalent radical of pyridine or pyrazine, and is unsubstituted or substituted by chlorine, bromine, alkyl of 1 to 4 carbon atoms, phenyl, phenoxy, carbamoyl, alkylcarbonylamino where alkyl is of 1 to 3 carbon atoms, benzoylamino, methoxy or ethoxy, the number of substituents being 0, 1 or 2; which process comprises:

condensing (A) an amino-imino compound of the formula



or a bis-imino compound of the formula



wherein R′ and R″ each is hydrogen, alkyl of 1 to 4 carbon atoms, hydroxyalkyl of 2 or 3 carbon atoms, phenylalkyl of 7 or 8 carbon atoms or phenyl, with (B) barbituric acid, N-methylbarbituric acid, N,N′-dimethylbarbituric acid, N,N′-diphenylbarbituric acid, 2-thiobarbituric acid or 2-iminobarbituric acid, in the molar ratio of (A):(B) of 1:2, in water and in the presence of an acid selected from the group consisting of aliphatic carboxylic acids, aromatic carboxylic acids, aliphatic sulfonic acids, aromatic sulfonic acids, mineral acids and mixtures thereof, at a pH of from [1 to 6] *1.5 to 3.5* and at a temperature of from 20° to 150° C.

Re. 31,987

AUTOMATIC LAMP BULB CHANGER FOR SIGNAL LAMPS

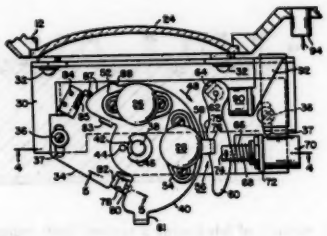
Russell M. Hartung, Webster; Larry Appleman, Rochester, and Warren R. Alexander, Pittsford, all of N.Y., assignors to General Signal Corporation, Stamford, Conn.

Original No. 4,402,038, dated Aug. 30, 1983, Ser. No. 455,079, Jan. 3, 1983. Application for reissue Mar. 22, 1984, Ser. No. 594,886

Int. Cl.⁴ F21V *19/04*

U.S. Cl. 362—20 **11 Claims**

1. In a signal lamp having a housing with the lens in one side, an automatic lamp changer which comprises a turntable having an axis about which it rotates, means rotatably mounting said turntable in said housing with one side of said turntable [parallel to] *extending in the direction of* and spaced from the axis of said lens, at least the pair of sockets for receiving lamps which when disposed in said sockets reach the optical axis of said lens, said sockets being disposed along different angularly spaced radii extending from the axis of said turntable, spring means for biasing said turntable to rotate about its axis, a latching mechanism for releasably positioning said turntable for movement between different positions having the same angular spacing as said radii and in which different ones of said lamps are aligned with said lens, said latching mechanism including at



least two latch means angularly spaced from each other by said angular spacing on said turntable and defining said different angular positions, detent means releasably engagable with said latch means, and means for actuating said detent means upon failure of a lamp in at least one of said sockets which is in one of said different angular positions in which said last named lamp is positioned in alignment with said lens, and switch means operated by said turntable for making electrical connection to the other of said pair of sockets to illuminate the lamp therein upon movement of said turntable to the next of said angular positions when said lamp in said other of said sockets moves into alignment with said lens.

PLANT PATENTS

GRANTED SEPTEMBER 17, 1985

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,557

ROSE PLANT JACLITE

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Comany, Medford, Oreg.

Filed Nov. 7, 1983, Ser. No. 549,300
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—8 **1 Claim**

1. A new and distinct variety of rose plant of the miniature class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its dwarf plant, mildew resistance, thorny stems, white flowers with a mild fragrance.

5,558

HYBRID TEA ROSE CV. AROKUNCE

Jack E. Christensen, Ontario, Calif., assignor to Armstrong Nurseries, Inc., Ontario, Calif.

Filed Dec. 5, 1983, Ser. No. 557,892
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—17 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, being particularly characterized by its abundant production of orange blended flowers, essentially as described and illustrated; its vigorous growth; its ease of growth; its well-above-average disease resistance; its nearly continual production of long-lasting flowers borne on cutting-length stems; and its bushy habit and abundant glossy foliage, which make it an attractive plant in the garden.

5,559

PEAR TREE (VARIETY 69)

Lyle A. Brooks, Forest Grove, Oreg., assignor to Carlton Nursery Company, Inc., Dayton, Oreg.

Filed Sep. 20, 1983, Ser. No. 534,179
Int. Cl.[4] A01H *5/03*
U.S. Cl. Plt.—36 **1 Claim**

1. A new and distinct variety of pear tree referred to by the cultivar designation Old Home x Farmingdale #69 and substantially as herein shown and described characterized particularly by its ability to serve as a rootstock for grafting of pear tree cultivars to produce "semi-dwarf" pear trees; further characterized by its resistance to the Fireblight disease and its tolerance of the Pear decline disease, further characterized by its non-rootsuckering habit, its hardiness, its excellent root-anchorage, its good compatibility with all major commercial pear varieties, its early bearing habit, and its ability to root easily and reproduce readily to hard and softwood cuttings.

PATENTS

GRANTED SEP. 17, 1985

ERRATA

For CLASS	See PATENT NO.
608–249	4,541,429
180–068	4,541,645
514–031	4,542,020
514–049	4,542,021
514–063	4,542,022
514–126	4,542,023
514–178	4,542,024
514–345	4,542,026
514–459	4,542,027
372–086	4,542,529

PATENTS

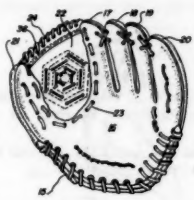
GRANTED SEPTEMBER 17, 1985

GENERAL AND MECHANICAL

4,541,125
EYEGLASSES APPARATUS, AND METHODS OF CONSTRUCTING AND UTILIZING SAME
Robert J. Phillips, 27427 Schoenherr, Warren, Mich. 48093
Filed Aug. 19, 1983, Ser. No. 524,604
Int. Cl.[4] A42B *1/24*
U.S. Cl. 2—10 **6 Claims**

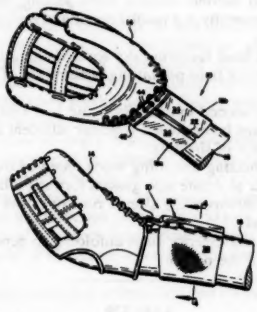
1. An eyeglasses apparatus, comprising:
a clip part adapted to be selectively removably attached to a cap visor;
said clip part including a substantially elongated member extending substantially in the transverse direction of said cap visor when said clip part is attached thereto;
a main eyeglasses part;
means for clipping said main eyeglasses part onto said elongated member of said clip part;
said clipping means being integrally formed with said main eyeglasses part so as to extend integrally upwardly from a central portion of said main eyeglasses part;
said clipping means being selectively directly engageable with said elongated member of said clip part so as to pivotably support said main eyeglasses part from said clip part such that said main eyeglasses part is pivotably movable between an operative position wherein said main eyeglasses part shields the eyes of a user and an inoperative position wherein said main eyeglasses part extends substantially parallel with said cap visor;
said clipping means comprising a plurality of upwardly extending fingers adapted to hingedly engage with said elongated member of said clip part;
said elongated member of said clip part being substantially straight;
said clipping means comprising a central finger and a pair of side fingers, said side fingers being disposed on respective sides of said central finger and extending in oppositely facing relation thereto;
said clipping means being hingedly engageable with said elongated straight member of said clip part such that said central finger engages said straight member on a side thereof opposite to a side of said straight member engaged by said side fingers;
said straight member of said clip part having a substantially rectangular cross section;
a pair of spaced apart ridge portions being formed around the periphery of said straight member of said clip part;
said side fingers engaging said straight member of said clip part adjacent respective ones of said spaced apart ridge portions; and
said side fingers abutting said ridge portions so as to prevent lateral movement of said main eyeglasses part relative to said clip part.

4,541,126
BALL GLOVE WITH FLEXIBLE WEB
John R. Howard, West Chicago, and Bob Machacek, Lombard, both of Ill., assignors to Wilson Sporting Goods Co., River Grove, Ill.
Filed Apr. 27, 1984, Ser. No. 604,727
Int. Cl.[4] A41D *13/10*
U.S. Cl. 2—19 **25 Claims**



1. A web for a ball glove comprising a sheet of glove material having a focal portion and a plurality of slits therein, the slits being arranged in a plurality of sets, the minimum distance between the focal portion and each slit of a particular set being approximately the same, said minimum distance being different for each set.

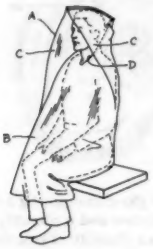
4,541,127
BASEBALL PROTECTION DEVICE
Russell J. Gould, Medford, Oreg., assignor to Diamond Guard, Inc., Medford, Oreg.
Filed Sep. 19, 1983, Ser. No. 533,426
Int. Cl.[4] A41D *13/10*
U.S. Cl. 2—19 **12 Claims**



1. A protection device for attachment to a baseball or softball glove comprising:
shielding means for protecting a medial part of the wrist and lower forearm of one who wears the glove;
wrist-securing means for securing said shielding means against the wrist and lower forearm such that said shielding means and wrist-securing means together completely encircle the wrist and lower forearm; and
attaching means for detachably fastening the device to the glove;
said shielding means including a pad of pliable, shock-absorbent material and a sheet of hard, semi-rigid material, said pad of pliable material comprising a body of solid, compressible material, and further including encasing means encasing said shock-absorbent material and semi-rigid material in overlying proximate relationship;

said shielding means including a plurality of separate but attached sections separated by a seam between said sections to give said shielding means added flexibility.

4,541,128
DISPOSABLE BONNET RAINCOAT
Neal Will, Rte. 3, Ravenwood Cir., Piedmont, S.C. 29673, and Larry R. Thurston, Rte. 2, Pelzer, S.C. 29669
Filed Apr. 30, 1984, Ser. No. 605,417
Int. Cl.[4] A41D *10/00*
U.S. Cl. 2—84 **18 Claims**



1. A disposable bonnet raincoat to be worn over the head and body of a person for protection from rain and the like comprising:

a tubular piece of waterproof sheeting having an interior opening bounded by said sheeting;

said tubular piece of sheeting being folded upon itself to define first and second opposing folded sides;

said first side including a first exterior flap and a first interior flap;

said second side including a second exterior flap and a second interior flap;

said first and second interior flaps joining together at a junction generally in a medial portion of said tubular piece of sheeting;

an elongated head receiving slot formed along said junction of said interior flaps permitting penetration of the person's head;

said first and second interior flaps and said first and second exterior flaps being joined together adjacent a top of said tubular piece of sheeting;

said folded sheeting unfolding when received over the body of a wearer to create side gussets forming a bonnet in the form of a downwardly sloped roof over the head of the wearer; and

said interior and exterior flaps unfolding to generally cover the body of the person.

4,541,129
SWEAT ABSORBENT UNDERSHIRT
Hideo Murakami, 7-23, 2-chome, Komatsu, Higashi-yodogawa Ward, Osaka, Japan
Filed Dec. 5, 1983, Ser. No. 557,896
Int. Cl.[4] A41B *9/06*
U.S. Cl. 2—113 **3 Claims**

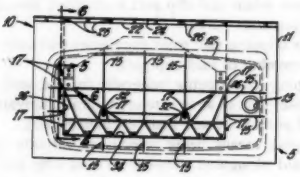
1. A sweat absorbent undershirt comprising a pair of open arm portions, an open neck portion, and a body portion having a top part and a bottom part, said top part of said body portion being connected to said pair of arm portions and said neck portion, wherein further comprising

a pile napped sweat absorbent cloth disposed on the inside of said undershirt and exposed to the body of a wearer, said pile napped cloth comprising a first panel disposed completely around the bottom part of said body portion, a second panel disposed completely around said open neck portion, and a plurality of third panels disposed between said top part and said bottom part with space between each of said third panels, and each third panel disposed only partially around said body portion, and at least one vertical panel connecting the first panel, second panel and plurality of third panels; and

a mesh netting cotton cloth connected to at least each of said panels of said pile napped cloth;

whereby said panels absorb seat of the wearer and said first panel prevents sweat from dropping below the bottom part of said undershirt.

4,541,130
BATHTUB ASSEMBLY
Scott A. Calvert, Granville; Robert J. Gelin, and Dale Aberegg, both of Newark, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Filed Apr. 10, 1984, Ser. No. 598,660
Int. Cl.[4] A47K *3/12*
U.S. Cl. 4—593 **6 Claims**



1. A bathtub assembly comprising;

a receptacle body having a plurality of support legs and attachment posts extending therefrom, said body having an apron portion extending therefrom, said apron having a lip and plurality of pins forming a plurality of recesses therebetween adapted to receive an after defined foot;

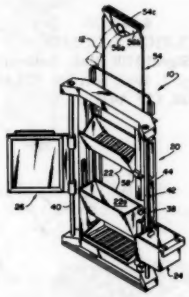
a brace member having integral planar section, hinge sections and base sections, the hinge sections pivotally connecting the planar section and base sections, said planar section having a foot extending therefrom adapted to fit between said lip and pins of said apron, said planar section having a stud extending therefrom, said base sections having a locating socket adapted to receive said stud extending from said planar section when said brace is oriented in the installed position, said stud and socket being adapted to positively locate said brace along the bottom of said receptacle body; and

fastening means adapted to attached said base sections to said posts.

4,541,131
COMBINATION BATH AND SHOWER ACCESSORY
Howard Sussman, 3101 NW. 25th Ave., Pompano Beach, Fla. 33060
Filed Jul. 30, 1984, Ser. No. 635,509
Int. Cl.[4] A47F *5/08*
U.S. Cl. 4—596 **2 Claims**

1. An article of manufacture for combined use as a bath and shower accessory comprising a rectangular frame having in

the long sides thereof a pair of opposing faces each having at least one longitudinally oriented slot therein, plural trays mounted in spanning relation between said frame long sides having opposite cylindrical lateral projections operatively disposed in said slots for selected sliding movement therealong and rotative movement about the axis of said cylindrical lateral projections, and slidable supports extendable in opposite directions from said frame such that when a cooperating pair thereof is in extended position said frame is adapted to be



horizontally supported thereon and when only one said support is in its extended position, said frame is adapted to be vertically suspended therefrom, whereby said horizontally supported frame with said trays in one rotative position is adapted to be supported in spanning relation between the sides of a bathtub when serving as a bath accessory and also is adapted when vertically suspended from a support with said trays in a 90 degree rotated position to serve as a shower accessory.

4,541,132

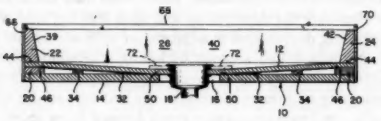
SHOWER PAN

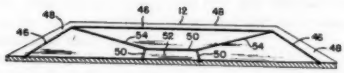
Jack C. Long, 13030 NE. 102nd Pl., Kirkland, Wash. 98033

Continuation of Ser. No. 374,323, May 3, 1983, abandoned. This application Feb. 9, 1984, Ser. No. 577,734

Int. Cl.[4] A47K *3/22*

U.S. Cl. 4—614 **13 Claims**





1. A pre-fabricated shower panel, comprising:

(a) a single piece multiple ply fibrous drain panel having a first substantially flat pre-installed orientation and a second contoured installed orientation;

(b) said panel when in said installed orientation having an elevated section joined to a lower section by interconnected sloping sections contiguous with said elevated and lower sections;

(c) said lower section of polygon shape with straight edges thereof provided by kerfed relief cuts adapted for facilitating displacement of said lower section from said pre-installed to said installed orientation and for providing straight edges for an overlayer;

(d) said lower section having a drain opening therethrough;

(e) said sloping sections include section to section boundaries provided by straight relief cuts extending radially outwardly from the vertices of intersection of the straight edges of the polygon shape defining said lower section and adapted for facilitating displacement of said lower section from said pre-installed to said installed orientation and for providing straight boundary edges for an overlayer;

(f) a foundation adapted for supporting said lower section; and,

(g) support members disposed between said foundation and at least said elevated section for supporting said panel.

4,541,133

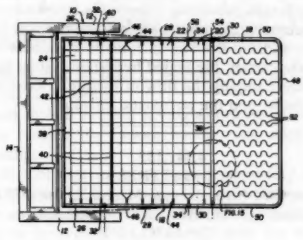
SOFA BED

Bernard Reiss, Baltimore, and Irl E. Ward, Salisbury, both of Md., assignors to Sealy of Maryland and Virginia, Inc., Baltimore, Md.

Filed Dec. 13, 1982, Ser. No. 449,254

Int. Cl.[4] A47C *17/04*

U.S. Cl. 5—13 **27 Claims**



1. A sofa bed, comprising:

a stationary framework;

a foldable bed frame connected to and foldable into said framework, said foldable frame having an outer section pivotally attached to an intermediate section which is pivotally attached to a body section, the outer section overlying the body section in the folded position of the frame to form a seat deck;

said outer section having a plurality of individual seat support elements extending thereacross transversely to the axis of pivotal attachment of said outer section to said intermediate section, said individual elements being spaced apart in a direction parallel to said axis, and each of said individual elements being downwardly deflectable independently of the others when a person sits on said seat deck;

mattrress support means at at least said bed frame intermediate section;

and means to attach said mattress support means to said bed frame that unfolding of said bed frame firms said mattress support means and folding of said bed frame loosens said mattress support means.

4,541,134

VIBRATION DAMPING SUPPORTS

Joseph Black, Bath; Mark A. Foster, Amesbury, and Nicholas G. Luard, Eastbourne, all of England, assignors to The University of Bath, Bath, England

Filed Aug. 23, 1983, Ser. No. 525,816

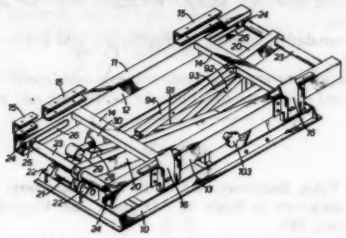
Claims priority, application United Kingdom, Sep. 4, 1982, 8225269; Jan. 13, 1983, 8300850

Int. Cl.[4] A61G *1/06*

U.S. Cl. 5—118 **4 Claims**

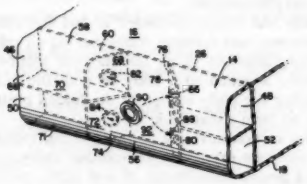
1. Apparatus for use in supporting a patient on a stretcher in a vehicle, comprising a base support, an upper carrier for the

stretcher, at least two support arms pivotally mounted on the base support and connected to the upper carrier at horizontally displaced positions, means for restraining horizontal movements of the carrier in a direction perpendicular to the pivot axes of the support arms, and means for exerting a resilient upward force on each support arm including a movable piston connected to a point on the arm displaced from the pivot axis,



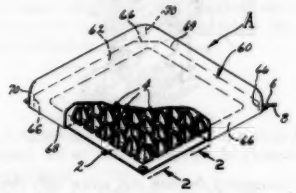
a pneumatic chamber acting as a gas spring, a sealed hydraulic system including a first diaphragm engaged by the piston and a second diaphragm providing a movable interface with the gas in the pneumatic chamber, and including means for independently pressurising the two pneumatic chambers to raise, lower or tilt the carrier, the sealed hydraulic system including restrainer means damping the flow of hydraulic fluid between the piston cylinder and the pneumatic chamber.

4,541,135
AIR MATTRESS
Victor Karpov, 6236 Kirby Downs, Memphis, Tenn. 38115
Filed Apr. 16, 1984, Ser. No. 600,458
Int. Cl.[4] A47C *27/08*
U.S. Cl. 5—455 **12 Claims**



1. An air mattress comprising:
an inflatable compartment formed of flexible material and defined by a ceiling, a floor, first and second spaced parallel end walls, and first and second spaced parallel side walls extending between said first and second end walls,
said end and side walls interconnecting said ceiling and said floor and forming the side edges of said inflatable compartment, and
an inflatable tube extending about said side edges of said inflatable compartment, connected to each said side edge, and when inflated providing support for said side edges,
said inflatable tube having a divider wall through a cross-section thereof and a chamber generally opposite said divider wall, said divider wall and said chamber dividing said inflatable tube into first and second opposed inflatable C-shaped support tubes,
said chamber including a valve means from the exterior to the interior of said chamber and first and second one-way valves passing from the interior of said chamber to said first and second C-shaped support tubes, respectively, and constructed such that, when air is forced through said valve means into said chamber and pressure builds in said chamber, air is forced through said first and second one-way valves thereby simultaneously inflating said first and second C-shaped support tubes, and such that said first and second one-way valves prevent air from freely flowing out of said C-shaped support tubes into said chamber when pressure is applied to said first and second C-shaped support tubes.

4,541,136
MULTICELL CUSHION
Robert H. Graebe, 4 Signal Hill Blvd., Belleville, Ill. 62223
Filed Sep. 1, 1983, Ser. No. 528,616
Int. Cl.[4] A47C *27/08*
U.S. Cl. 5—456 **19 Claims**

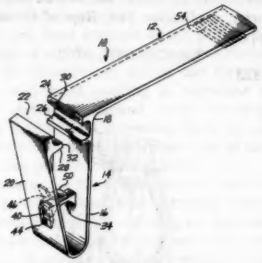


1. An inflatable cushion comprising: a flexible rectangular base formed from a flexible material and having corners; air cells attached to and projecting outwardly from the base to form an array, with the air cells likewise being formed from a flexible material, the interiors of the air cells further being in communication through the base for equalizing the pressure within the air cells, each air cell when deflated having four laterally directed projections with each projection having closely spaced side walls, the side walls of adjacent projections being connected near the center of the air cell to form depressions in the sides of the air cell, the air cells being arranged on the base in an array with the depressions of adjacent air cells facing each other, the air cells when the pressure within them is increased being adapted to expand such that the side walls of their projections move outwardly away from their centers and thereby eliminate the depressions and such that the side walls along opposing depressions in adjacent air cells are adapted to come into contact; and a cover including a retaining section that underlies the base and a covering section that is attached to the retaining section and extends over and around the array of air cells, the covering section being formed from an elastic fabric, the corners of the rectangular base being projected through the cover.

4,541,137
BEDDING HOLDER
Lester K. Murray, 16717 Maplewild SW., Seattle, Wash. 98166
Filed Nov. 28, 1983, Ser. No. 555,062
Int. Cl.[4] A47C *21/02*
U.S. Cl. 5—498 **12 Claims**

1. A device for holding bedding in place comprising: an elongated arm to be inserted between a mattress and a mattress support, a deep essentially U-shaped section having one leg joined to the outer end of the inserted arm with the open end of the U-shaped section up and having inwardly directed cooperating projections, a support member joined to the inside of one leg extending toward the opposite leg and having a knob

on the end, and the second leg having an opening sized and located to permit the knob to extend through and catch against



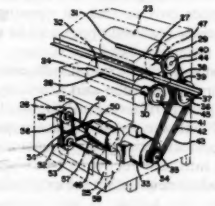
a side of the opening to latch the legs with cooperating projections together and hold the bedding in place.

4,541,138

GOLF CLUB HEAD CLEANING MACHINE

Ralph W. Varrial, 17044 159 Pl. SE., Renton, Wash. 98055

Filed Jun. 28, 1984, Ser. No. 625,736
Int. Cl.[4] A63B *57/00*; A46B *13/02*
U.S. Cl. 15—21 D **6 Claims**



1. A golf club head cleaning machine comprising:

a cabinet having a back, a first side, a front, a second side and a slot comprising a first side portion in said first side, a front portion in said front and a second side portion in said second side whereby a passage is provided through said cabinet from side to side and open across said front, said passage being oriented essentially in a horizontal plane,

a first upper brush having a first cylindrical shape, bristles, a periphery and a first axis of said first cylindrical shape,

a second lower brush having a second cylindrical shape, bristles, a periphery and a second axis of said second cylindrical shape,

means for rotatably mounting said first and second brushes for rotation about said first and second axes with said axes:

(a) parallel to each other.

(b) essentially parallel to said front,

(c) lying in a first plane which is at an angle with said horizontal plane such that said first upper brush is closer to said back than said second lower brush,

(d) said angle being in the range of 50 degrees to 70 degrees,

means for rotatably mounting said first and second brushes for rotation of each about each of said axes with said axes parallel to each other and essentially parallel to said front and so that there is a first area of close proximity of said peripheries and so that said area is in said passage and,

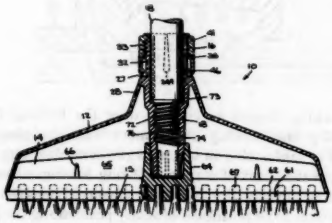
means for rotating said brushes about said axes with said bristles of said first brush moving through said front area of close proximity in a first direction and said bristles of said second brush moving through said first area of close proximity in a second direction, opposite to said first direction, whereby a golf club head moved through said passage from side to side of said machine passes through said first area of close proximity and is exposed to cleaning action by said bristles.

4,541,139

BROOM SHROUD

David A. Jones, Kettering, Ohio, and Daniel A. Maust, Winfield, Ill., assignors to The Drackett Company, Cincinnati, Ohio

Filed Jun. 3, 1983, Ser. No. 500,662
Int. Cl.[4] A46B *9/08*
U.S. Cl. 15—171 **33 Claims**



1. A broom shroud adapted to receive a a broom handle, the broom shroud comprising:

(a) a broom shroud housing having a neck member having a bore to receive the broom handle, said neck member comprising:

(i) a collet or exterior neck portion extending upwardly from the top of the housing, the collet being provided with an externally threaded section and a plurality of vertical through slots extending from the top of the collet through the threaded section, at least one slot being wholly disposed in a quadrant of the collet, the quadrant being defined by intersecting vertical planes coplanar with the longitudinal and lateral axes of said housing, said slot having a wall defined by a vertical plane normal to the longitudinal axis of the housing, and

(ii) a socket or interior neck portion extending inwardly into the housing from the collet;

(b) an internally threaded locking cap adapted to engage said collet, and

(c) means for securing bristles to said housing,

whereby fastening the locking cap to the housing compresses the slotted portion of the collet, said collet tightly engaging the broom handle received by the bore.

4,541,140

COMBINATION COUPLER AND SUPPORT BEARING FOR A PAINT ROLLER

Philip J. Allison, Renforth, Canada, assignor to T. S. Simms & Co. Limited, Saint John, Canada

Filed Mar. 26, 1984, Ser. No. 593,399
Claims priority, application Canada, May 18, 1983, 428455
Int. Cl.[4] B05C *17/02*
U.S. Cl. 15—230.11 **2 Claims**

1. A combination coupler and support bearing comprising:

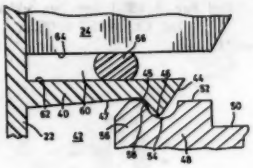
(a) an end wall,

(b) roller support means projecting from said end wall and adapted to fit within an end of tubular support of a paint roller,

(c) a plurality of locking fingers projecting from said end wall, each of said fingers having a free outer end spaced a substantial distance from said end wall, said locking fingers being circumferentially spaced with respect to one another about a longitudinal axis of rotation, and forming a socket radially inwardly thereof, said locking fingers being flexible to permit a plug to enter said socket, said

locking fingers being spaced radially inwardly from said roller support means to provide an annular recess therebetween, said annular recess being axially elongated in the direction of said longitudinal axis of rotation and extend a substantial distance inwardly from the free outer ends of the fingers toward the end wall,

(d) a resilient clamping member mounted in said recess and applying a radially, inwardly directed compressor force to



the locking fingers serving to urge the locking fingers inwardly into locking engagement with the plug positioned in said socket in use, said resilient clamping member is in the form of a rubber O-ring having a thickness which is substantially less than the axial length of the recess so as to be positionable at any point along the length of the recess, to apply compressive forces which are proportional to the distance between the O-ring and said end wall.

4,541,141

MACHINE FOR WASHING ELECTRONIC CIRCUITS

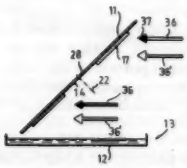
Yves le Goff, Versailles, France, assignor to Electronique Serge Dassault, Paris, France

Filed Nov. 18, 1982, Ser. No. 442,745

Claims priority, application France, Nov. 19, 1981, 81 21715

Int. Cl.⁴ B08B *3/02*

U.S. Cl. 15—302 **10 Claims**



1. A washing machine for electronic components disposed in a package, comprising;

a circular tray rotatable about an axis inclined at 45° to the horizontal, whereby said tray has a surface lying at an angle of 45° to the horizontal, said tray supporting on said surface at least one package to be washed, so that said pr. kage orbits said axis; and

a plurality of nozzles having horizontal axes and disposed in an array around the center of said tray within the horizontally projected outline of said tray for training respective jets of liquid at different points at different quadrants around said tray, whereby upon rotation of said tray, said package passes through each of the respective jets to be washed, with the angle at which each jet is trained upon said package varying as the package passes therethrough, and the angle with which each jet is trained upon said package differing from jet to jet.

4,541,142

VACUUM CLEANER

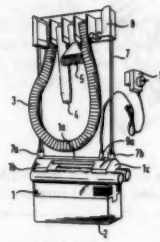
Horst Pudwill, Hong Kong, Hong Kong, assignor to CEP Continental Engineering Products Co., Ltd., Kowloon, Hong Kong

Filed Jul. 22, 1983, Ser. No. 516,355

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1983, 8300676[U]

Int. Cl.⁴ A47L *9/00*

U.S. Cl. 15—323 **5 Claims**



1. A portable vacuum cleaner comprising:

a housing having an upper part and a lower part;

means for detachably connecting said upper and lower parts together;

a handle on said upper part having an elongated hand grip portion;

a substantially arcuately shaped enlarged portion at each end of said handle connecting said handle in spaced relationship to said upper part so that an opening is provided between said handle and said upper part to accommodate at least part of the user's hand;

a recess on at least one side of said handle extending within said housing formed between said arcuately shaped portions and said upper part having a shape similar to accessories to be used with the vacuum cleaner and adapted to receive said accessories so that said accessories are removably insertable into said recess to be substantially completely contained therein within the external surface of the housing;

means in said recess on said upper part to removably fasten said accessories within said recess so that said accessories do not extend substantially beyond the outer surface of said housing;

an elongated shoulder strap device attached at its ends to said housing to support said housing thereby;

suction producing means within said housing;

dust collecting means within said housing operatively connected to said suction producing means; and

an opening on said housing to operatively and removably connect accessories to said suction producing means.

4,541,143

METHOD AND APPARATUS FOR FORMING A PATTY TO ACCOMMODATE TISSUE FIBER FLOW

James A. Holly, Boca Raton, Fla., assignor to Holly Systems, Inc., Boca Raton, Fla.

Filed Nov. 23, 1982, Ser. No. 443,212

Int. Cl.⁴ A22C *7/00*

U.S. Cl. 17—45 **20 Claims**

1. A method for forming a patty of plastic food material containing tissue fibers, said method comprising the steps of:

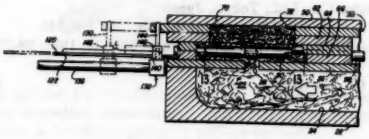
(a) providing a foraminous member having an upstream side and a downstream side with apertures therein communicating between said upstream side and said downstream side, said apertures being arranged in rows in said foraminous member, said foraminous member defining a plurality of slots extending through said foraminous member, each said slot extending between and connecting adjacent apertures in one of said rows;

(b) providing mold parts defining a mold opening and at least a portion of a mold cavity having the shape of at least a portion of the exterior surface of said patty and positioning said mold parts to dispose said mold opening at a patty molding position adjacent said downstream side of said foraminous member; and

(c) forcing said food material under pressure from the upstream side of said foraminous member through said apertures to the downstream side of said foraminous member and into said mold opening as extrudate masses which together define a packed array forming said patty whereby tissue fibers extending between adjacent apertures in one row on the upstream side of said foraminous member can pass through said slots.

12. An apparatus for molding a patty of plastic food material which contains tissue fibers, said apparatus comprising:

(a) a foraminous member defining an upstream side and a downstream side and having apertures communicating between said upstream and downstream sides;



(b) mold parts defining a mold opening adjacent said foraminous member, said mold opening defining at least a portion of a mold cavity into which the food material can be forced through said foraminous member apertures to form a molded patty;

(c) means for forcing said food material under pressure directly against said upstream side of said foraminous member to effect movement of some of said food material from the upstream side of said foraminous member through said apertures to the downstream side of said foraminous member and into said mold opening as extrudate masses which together define a packed array forming said patty; and

(d) agitator means for effecting substantial agitation of said food material that is against the upstream side of said foraminous member in a direction generally parallel to said upstream side while operating said forcing means whereby tissue fibers that may have lodged on the upstream side of said foraminous member with opposite end portions extending in different apertures are dislodged.

4,541,144

TEXTILE-FIBER MIXING CHAMBER

Franz Hoeck, Hohkeppeler Strasse 29 A, 5063 Overath 3, Fed. Rep. of Germany

Filed Jun. 7, 1984, Ser. No. 618,023

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1983, 3320798

Int. Cl.[4] **D01G** *13/00*; **B65G** *53/40*

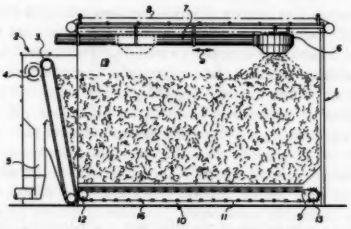
U.S. Cl. 19—145.5 **5 Claims**

1. In a textile fiber mixing chamber comprising an open top for receiving fibrous products to be mixed before other processing, the chamber having a vertical side and back walls to confine the product, having an open front side permitting mixed products to be transported out for removal from said chamber, a stationary floor capable of supporting product, and a motor means for propelling product from said chamber, the improvement comprising

a. an endless conveyor belt means disposed adjacent said floor and motively aligned to feed the egress side of the chamber consisting essentially of a parallel pair of endless link chains spaced apart and substantially filling the width of said chamber, being synchronously linked while in movement;

b. a plurality of members each having an outwardly orientated U-profile and extending transversely between the parallel chains, with the lineal distance between successive members being substantially less than the distance between the chain themselves; and

c. an offset linking bar disposed at each end of each transverse member with said bar having its lower oriented edge



pinned to the base portion of the member end and its upper oriented edge pinned to one link of the abutting endless chain, and with an opposing pair of linking bars positioned between the chains so as to retain the transversely oriented member substantially at right angles to the direction of chain travel.

4,541,145

DEVICE FOR CLAMPING THE SPLIT PORTION OF A SPLIT HEAT-SHRINKABLE SLEEVE

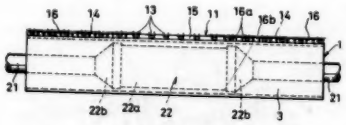
Mitomu Sato; Toshikazu Nakatani; Katsumi Yamashita, and Terumi Ogata, all of Kanagawa, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Nov. 29, 1983, Ser. No. 555,929

Claims priority, application Japan, Nov. 29, 1982, 57-181399[U]

Int. Cl.[4] **B65D** *63/02*; **F16L** *39/00*

U.S. Cl. 24—19 **2 Claims**



1. A device for clamping the split portion of a split heat-shrinkable sleeve, said split portion having a pair of upstanding, longitudinally extending lugs; said device comprising a pair of longitudinally extending holding strip means for holding said lugs therebetween; and a plurality of spring means rotatably attached to one of said holding strip means and spaced apart from one another along the length of said one holding strip means, said spring means being engagable over both of said strip means for holding both of said strip means resiliently against said lugs and for clamping said lugs together, each of said holding strip means being foldable and comprising link assembly means comprising a plurality of pivotally connected links; sleeve means on some of said links for receiving a connecting rod means; and removable connecting rod means insertable in said sleeve means for holding said strip means in a straight, unfolded condition.

4,541,146

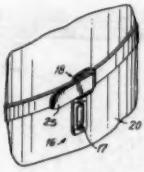
CINCHING CLAMP DEVICE AND METHOD OF ATTACHMENT

Charles Giannone, N. Babylon, N.Y., assignor to Duro Dyne Corporation, Farmingdale, N.Y.

Filed Mar. 5, 1984, Ser. No. 586,335

Int. Cl.[4] B65D *63/02*

U.S. Cl. 24—20 R **4 Claims**



1. As a new article of manufacture, a self-locking clamp band comprising an elongate, integral flexible metal strip having parallel side edge portions, said strip including a free end and an anchor portion at the other end, said anchor portion being defined by a plurality of turns of said strip folded normal to the longitudinal axis of said strip and convoluted about said strip, said plurality of turns defining a passage generally rectangular in transverse section and sized to permit the unimpeded passage therethrough of said free end, said anchor portion including a transversely extending locking tab defining the end of said strip remote from said free end and projecting laterally beyond said anchor portion, the convolutions defining said passage of said anchor portion being subject to constriction into gripping relation of said side edges of a length of said strip extending through said passage responsive to pressure exerted against said anchor portion in a direction axially of said strip.

4,541,147

SKI-BOOT FASTENING DEVICE WITH AN ADJUSTABLE-LENGTH TIE ROD FOR VARYING THE TENSION OF THE FASTENING UNDER LOAD

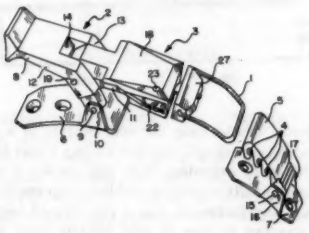
Oliviero Olivieri, Montebelluna, Italy, assignor to Icaro Olivieri & C. S.p.A., Montebelluna, Italy

Filed Oct. 11, 1983, Ser. No. 540,757

Claims priority, application Italy, Oct. 12, 1982, 23158/82[U]; Oct. 12, 1982, 23159/82[U]

Int. Cl.[4] A43C *11/14*

U.S. Cl. 24—68 SK **14 Claims**



1. A ski-boot fastening device for allowing the adjustment of the fastening tension under load, of the type including ring-like hook means, a tensioning unit, and a tie rod by means of which the tensioning unit acts on the hook means, wherein the improvement consists in said tie rod comprising:

a rod-shaped element having at least one section with a plurality of transverse notches which are longitudinally aligned therealong;

a substantially plate-shaped body defining a hole which extends parallel to the line of action of said tie rod and has dimensions so as to couple with at least said notched section of the rod-shaped element;

a seat formed in the substantially plate-shaped body and opening into said hole;

a locking member mounted in said seat and guided for movement transverse said hole to releasably engage a notch of said section of the rod-shaped element, and

resilient means which oppose the movement of said locking member transverse said hole.

4,541,148

TILTABLE TACK BUTTON

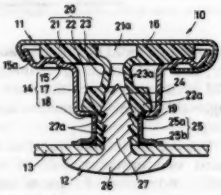
Hirokazu Watanabe, Kurobe, Japan, assignor to Nippon Notion Kogyo Co., Ltd., Tokyo, Japan

Filed Feb. 16, 1984, Ser. No. 580,741

Claims priority, application Japan, Feb. 18, 1983, 58-22666[U]

Int. Cl.[4] A44B *1/38*

U.S. Cl. 24—108 **1 Claim**



1. A button for attachment to a garment fabric, comprising:

(a) a button body including a button back and a cap covering said button back on its obverse side, said button back including a hollow hub disposed remotely from said cap and extending perpendicularly to and centrally of said cap, a first flange projecting outwardly from one end of said hollow hub, and a second flange projecting inwardly from the other end of said hollow hub to define a central aperture;

(b) an interior member of thermoplastic synthetic resin including a disk-like portion non-rotatably held between said cap and said first flange of said button back, a socket portion extending through said central aperture defined by said second flange of said button back, and a resilient connecting portion integral with said disk-like portion and said socket portion and extending between said disk-like portion and said socket portion and normally urging said disk-like portion to lie perpendicularly to said socket portion, said connecting portion comprising a pair of elongate planar webs disposed diametrically of said socket portion, said socket portion having a collar loosely received in said hollow hub and normally urged against said second flange of said button back under the resilience of said connecting portion, said socket portion also having an axial bore, said connecting portion being bendable so that said disk-like portion and thus said button body can be manually tilted with respect to the axis of said socket portion against the resilience of said connecting portion;

(c) an eyelet member non-rotatably mounted on said socket member at a collar-free side thereof; and

(d) a tack member including a head and a shank projecting perpendicularly and centrally from said head for being pierced through the garment fabric and then inserted into said axial bore of said socket portion to thereby join said tack member with said button body.

4,541,149

DEVICE FOR SELECTIVELY LOCKING AND RELEASING A ROPE MEMBER EXTENDING THERETHROUGH

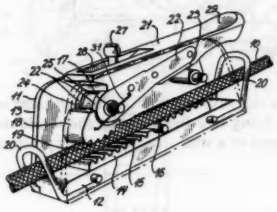
Jens C. Jensen, Kalundborg, Denmark, assignor to Sophus Berendsen Marine A/S, Copenhagen, Denmark

Filed Feb. 13, 1984, Ser. No. 579,510

Claims priority, application Denmark, Feb. 11, 1983, 621/83

Int. Cl.⁴ F16G *11/00*

U.S. Cl. 24—134 R **10 Claims**



1. A device for selectively locking and releasing a rope member extending therethrough, said device comprising

a frame, a first rope engaging surface on said frame,

a rope clamping member mounted in the frame so as to be swingable about a fixed axis and having a second rope engaging surface positioned opposite to and spaced from the first rope engaging surface so as to define a rope receiving passage between said rope engaging surfaces, the clamping member being swingable in first and second directions so as to reduce and increase the spacing of the rope engaging surfaces, respectively,

a handle mounted swingably about said axis,

releasable coupling means for releasably coupling the handle to the clamping member, whereby the clamping member may be manually swung in said first and second directions between rope locking and rope releasing positions, respectively, by means of the handle, while the handle may be moved independently of the clamping member, when the coupling means is released.

4,541,150

CONNECTION FOR STRAP

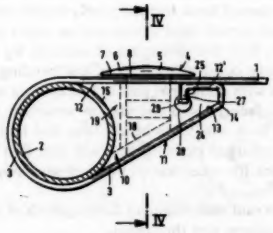
Manfred Brokmann, Silcherstrasse 5, 4500 Osnabrück, Fed. Rep. of Germany

Filed Sep. 27, 1983, Ser. No. 536,413

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1982, 3237124

Int. Cl.⁴ A44C *5/18*; A47H *13/00*

U.S. Cl. 24—265 C **21 Claims**



1. A connection for connecting a strap to a frame member of an article of furniture, said frame member having at least a partial arcuate section, comprising a separable wedge-shaped body member adapted to be disposed adjacent to said frame member, said body member having a first surface and a second surface, said first and second surfaces convering toward one another to form said wedge shape, said body member also having a concave arcuate surface extending between said first and second surfaces, said concave arcuate surfaces abutting and generally conforming to said arcuate section of said frame member, said strap passing over said first surface, around at least a portion of said frame member, and on to at least a portion of said second surface such that said strap has a loop disposition extending at least partially around said frame member and said body member, a connecting member disposed over said first surface such that a portion of said strap is located between said connecting member and said body member, and securing means on said connecting member and on said body member for securing said connecting member to said body member, said securing means comprising a projecting portion on said connecting member and a receiving portion on said body member, said strap having a longitudinally extending slit through which said projecting portion passes, said strap initially being placed in said loop disposition extending at least partially around said frame member and said body member and being subsequently secured by said securing means as said projecting portion of said connecting member is received in said receiving portion of said body member, said body member being swivelable about said frame member along the respective abutting arcuate surfaces so that said body member engages said strap and and acts as a lever to apply tension to said strap prior to being secured by said securing means to thereby facilitate assembly thereof.

4,541,151

WATCH STRAP WITH A CATCH, PARTICULARLY ARTICULATED STRAP

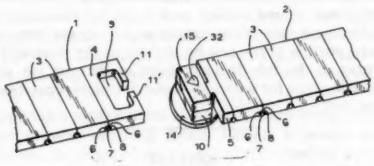
Wolfgang Herchenbach, and Dieter Nischwitz, both of Pforzheim, Fed. Rep. of Germany, assignors to Rodi & Wienenberger AG, Pforzheim, Fed. Rep. of Germany

Filed Nov. 18, 1983, Ser. No. 553,471

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1982, 8232954[U]; Nov. 26, 1982, 8233252[U]; **Jan. 15, 1983, 8300986[U]**

Int. Cl.⁴ A44C *5/18*

U.S. Cl. 24—265 WS **18 Claims**



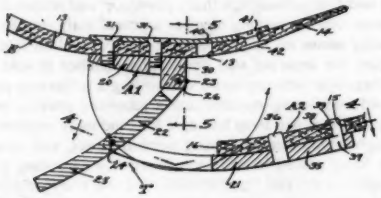
1. A watch strap with a catch, particularly an articulated strap interconnected by hinge joints, comprising strap links and catch parts of substantially uniform thickness; one catch part at one end of the strap having a substantially C-shaped configuration defining a recess, and the other catch part at the other end of the strap having an extension snugly fitting in the recess and being flush with the one catch part in a plane; a stop member arranged at the lower side of the extension of the other catch part to permit the insertion of the extension in the recess from the lower side of the strap only; the recess and the extension having a shape which prevents shifting and/or angular displacement between the two catch parts in said plane; an arresting plate arranged on the upper surface of said extension; and the hinge joints including hinge tubes which are secured to the assigned links and catch parts by laser-beam welding points.

4,541,152

QUICK HOOK-UP AND RELEASE BUCKLING FOR WEIGHT LIFTER BELTS

Thomas J. DiMarco, 12815 Pacific Ave., Apt. 7, Los Angeles, Calif. 90066, and Joel E. Di Marco, 4288 Revere Pl., Culver City, Calif. 90230

Filed Dec. 5, 1983, Ser. No. 558,019
Int. Cl.⁴ A44B *11/20*
U.S. Cl. 24—271 **5 Claims**



1. A quick hook-up and release buckling for belts of substantial width and thickness having opposite dead end and live end portions and having a tightened closed condition and an interconnected released condition for subsequent complete separation of one or two anchor means, and including;

a releasable toggle means comprised of a first anchor means permanently secured to the dead end portion of the belt, a second anchor means comprised of a plate to overlie and releasably secured to the live end portion of the belt in the closed and in the interconnected released condition, and a link pivoted to the first anchor means by a fulcrum pin and to an extension of the second anchor member by a draw pin spaced from the live end of the belt, the extension lying contiguous over the first anchor means when the toggle means is in a closed over-center condition drawing the second anchor means into a tightened closed condition, the live end portion of the belt having two longitudinally spaced bearing holes, and the plate having two longitudinally spaced pins engageable through said spaced bearing holes for bearing engagement against the sides thereof toward an end portion of said belt, one pin having an offset half diameter to bear in its hole and a full diameter head hooked through the live end portion of the belt, and the link swinging free when released from said closed over-center condition for interconnected separation of the first and second anchor means and for subsequent complete separation of the second anchor means from the live end portion of the belt by shifting of the plate and alignment of the full diameter head of the one pin with its bearing hole for withdrawal and complete separation from the belt.

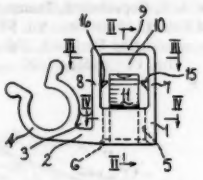
4,541,153

MOUNTING CLIP

Harold Schäty, Wetzlar, Fed. Rep. of Germany, assignor to USM Corporation, Farmington, Conn.

Filed Feb. 6, 1984, Ser. No. 577,585
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1983, 8303422[U]
Int. Cl.⁴ E04B *1/38*
U.S. Cl. 24—305 **3 Claims**

1. A plastic mounting clip for pressing onto a stud having ridges extending radially therefrom, said clip comprising a plurality of walls forming a box, said box having a hole formed therein for accommodating a stud, a pair of opposed flexible walls each extending from the top of one of two opposed walls of said box walls axially with respect to said hole and connected by a top wall to provide a frame forming an opening between said box and said top wall, a pair of opposed resilient fingers each extending upwardly from the top of one of two other opposed walls of said box walls and into said frame opening for engagement with the ridges on a stud extending through said hole and a pair of substantially rigid detents located on and projecting inwardly from said frame walls for



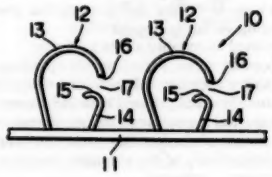
engaging the ridges on a stud extending through said hole, said frame walls being of a flexibility to allow said detents to ride over the ridges of a stud when the clip is pressed onto a stud.

4,541,154

HOOKED FABRIC FASTENER TAPE

Masahiko Ito, and Toru Ogihara, both of Funabashi, Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Continuation of Ser. No. 320,488, Nov. 12, 1981, abandoned. This application Nov. 4, 1983, Ser. No. 549,214
Int. Cl.⁴ A44B *13/00*
U.S. Cl. 24—442 **5 Claims**



1. A method of making a hook-type fastener tape for engagement with a loop-type fastener tape comprising a fabric base and a multiplicity of loops projecting from a face of said base at different angles and comprising loops having crests at different distances from said base, said method comprising weaving a foundation structure with a multiplicity of loops of thermoplastic synthetic resin monofilament projecting from one surface of said foundation structure, each of said loops including a pair of leg sections and a curved head section interconnecting said leg sections, cutting one leg section of each of a plurality of said loops of thermoplastic synthetic resin monofilament to provide a first curved hook formed jointly by the other of said leg sections, said curved head section and an upper part of said one leg section, with the remainder of said one leg section of each of said loops constituting a stem, and bending said stem over out of line with said upper part of said one leg section and toward said surface of said foundation structure to form a second curved hook smaller in height than said first hook and to provide an enlarged opening between said first hook and said second hook for reception of loops of said loop-type fastener tape

the portion of said monofilament forming both of said hooks being of uniform size througout,

said first hooks being engageable with loops of said loop-type fabric fastener tape having crests closer to said base and said second hooks being engageable with loops of said loop-type fabric fastener tape having crests farther from said base to join said hook-type fabric fastener tape securely with said loop-type fabric fastener tape.

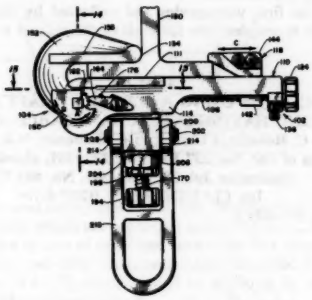
4,541,155
PORTABLE BEAM CLAMP

Paul L. Gagnon, 3714 Via Pacifica Walk, Oxnard, Calif. 93030

Continuation-in-part of Ser. No. 482,925, Apr. 7, 1983. This application Apr. 26, 1984, Ser. No. 604,324

Int. Cl.⁴ A44B *21/00*

U.S. Cl. 24—486 **28 Claims**



1. A beam clamp comprising:

an arched stationary jaw having an upper arm and lower arm defining an opening therebetween;

a movable jaw pivotally connected to said stationary jaw having an upper face;

a cleat mounted upon said upper face with releasable securement means, said cleat being movable along the longitudinal axis of said movable jaw;

an anchor shaft extending transversely through said lower arm having a hollow threaded interior and a lower portion extending below the lower arm of said stationary jaw;

a collar mounted for rotation about the shaft lower portion; and

a clamp screw in threaded engagement with said anchor interior having an upper end adapted for engagement with the underside of said movable jaw and a lower end having manual engagement means.

4,541,156
METHODS OF DRYING TUBULAR KNITTED FABRIC

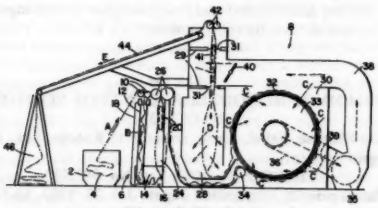
Ray P. Walsh, Leicester, and David H. Smith, Leicestershire, both of England, assignors to Pegg Whiteley Limited, Leicestershire, England

Filed Jul. 26, 1983, Ser. No. 517,432

Claims priority, application United Kingdom, Jun. 3, 1983, 8315351

Int. Cl.⁴ D06C *5/00*

U.S. Cl. 26—81 **5 Claims**



1. Method of drying tubular knitted fabric on a continuous basis which method includes the steps of

(A) overfeeding a rope of wet fabric after untangling to a first transverse stretcher;

(B) transversely stretching the untangled fabric to from 100% to 150% of a final dry fabric width to thereby bring the number of knitted course per unit fabric length to substantially that in the final dry fabric;

(C) expressing water by nip rollers from the transversely stretched fabric to remove water carried in the interstices of the fabric;

(D) overfeeding the expressed fabric to the exterior of a rotating drying drum at from 0% to 25%;

(E) revolving the fabric around the drum and reducing the water content to from 10% to 40% of the dry fabric weight while passing heated air from the drum exterior to its interior to thereby produce an unstretched, moist elastic fabric;

(F) drawing the fabric from the drum upwardly onto a second transverse stretcher to finally adjust the fabric width and obtain the final fabric width;

(G) blowing air at least partly recirculated from the drum interior onto the fabric on the second transverse stretcher to reduce the water content to less than 10% of the dry fabric weight, some of the air being diverted downwards inside the fabric to form a balloon intermediate the drum and the second transverse stretcher.

4,541,157
METHOD OF PRODUCING SPLIT BEARING RINGS

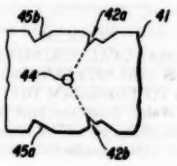
Noriyuki Tsushima, and Toshiharu Hirose, both of Kuwana, Japan, assignors to NTN Toyo Bearing Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 795,279, May 9, 1977. This application Jul. 19, 1979, Ser. No. 58,939

Claims priority, application Japan, Sep. 17, 1976, 51-112047

Int. Cl.⁴ B21K *1/04*

U.S. Cl. 29—149.5 C **4 Claims**



1. A method of producing a metal split bearing ring, said method comprising:

(a) forming a notch in one of the edge surfaces of said ring, said notch including at least a first portion having a V-shaped cross-section, wherein the axis bisecting the angle of the V is at an oblique direction with the axis of said ring;

(b) heat treating said metal ring to harden said metal ring to a hardness $H_{RC} \geqq 50$;

(c) applying a wedge stress along said notch using a wedge type pressure-breaking means having a wedge angle, wherein the angle of the wedge of the breaking means is between 20° and 60° and is greater than the angle of the V-shaped cross-section of said notch, whereby said ring is split along said notch.

4,541,158
PISTON AND CONNECTING ROD REMOVING AND INSTALLATION TOOL

Floyd A. Zumwalt, Rte. 2, Box 133, McMinnville, Oreg. 97128

Filed Jul. 5, 1983, Ser. No. 510,757

Int. Cl.⁴ B25B *27/02*

U.S. Cl. 29—278 **7 Claims**

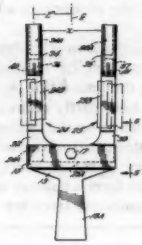
1. A tool for removing a piston and partially disassembled connecting rod with connecting rod bolts from an engine block, said tool comprising,

a base including a handgrip and arm mounting structure defining an upwardly opening channel extending normal to said handgrip,

right angular arm members having channel insertable segments adjustably mounted in said channel,

means locking said arms top an adjusted laterally spaced apart position to said base whereby spaced segments of said arm members are substantially parallel with one another,

arm extensions one each carried by said arm members and each defining a socket for the reception of an end segment of a connecting rod bolt,



said right angular arm members each having a manually displaceable upright arm segment with the upright arm segments normally being in slightly outwardly diverging relationship with one another and adapted for manual displacement into parallel relationship for engagement with parallel connecting rod bolts with subsequent manual release of the upright arm segments permitting same to laterally engage said bolts, and

coupling means removably coupling each of said extensions to an upright arm segment.

4,541,159

METHOD FOR MANUFACTURING LIGHT WAVEGUIDE BRANCHES AND MULTI/DEMULTIPLEXERS ACCORDING TO THE BEAM DIVIDER PRINCIPLE

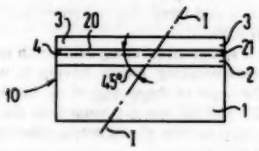
Herbert Michel; Walter Rauscher, both of Munich, and Achim Reichelt, Unterhaching, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 8, 1983, Ser. No. 511,840

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1982, 3236149

Int. Cl.⁴ B23P *17/00*; **G02B** *5/14*

U.S. Cl. 29—418 **10 Claims**



1. A method for manufacturing light waveguide branch elements and multi/demultiplexer elements, which elements operate according to a beam divider principle, said method comprising the steps of providing a first body having parallel extending first light waveguides at a given spacing disposed along one side thereof; cutting said first body along a plane forming an angle with the first waveguide to form two parts; polishing the cut surfaces of each of said parts; applying a reflective structure on one of the polished surfaces, said reflective structure consisting of material selected from a group of materials for forming partial mirrors and for forming filters; reassembling and joining said parts together to form an assembly with the waveguides of each of the parts being axially aligned and the reflective structure disposed therebetween; providing a second body having parallel extending second waveguides at said spacing, said second body being polished on one surface with the end faces of the second waveguides lying in the plane of said one surface; assembling the second body on the assembly with the one surface facing the one side and the polished end faces of the second waveguides being in the proximity of the reflective structure to receive light reflected thereby; and joining the second body to the assembly to complete the formation of the element so that the light traveling in the first waveguides and reflected by the reflective structure is coupled into the ends of the second waveguides.

4,541,160

PROCESS OF USING A FLEXIBLE SHAFT MOTOR COUPLING HAVING INTERCHANGEABLE ADAPTORS

Thomas C. Roberts, 4 Cloverly Rd., Somerset, N.J. 08873

Division of Ser. No. 237,306, Feb. 23, 1981, abandoned. This application Jul. 30, 1982, Ser. No. 403,375

Int. Cl.⁴ B22D *19/10*; **B23P** *6/00*

U.S. Cl. 29—401.1 **1 Claim**

1. A method of coupling a second driving member to a second driven member by means of a rotatable flexible shaft therebetween wherein said flexible shaft is coupling a first driving member to a first driven member, each of said second and first driving members having an output shaft of different size and each of said second and first driven members having an input shaft of different size, said flexible shaft having both ends thereof provided with integrally formed squares and wherein said first driving member and flexible shaft are connected by a first adapter having a bore at an outer end thereof for receiving output shaft of said first driving member and a hollow square at its inner end for matingly slidingly receiving an end of said flexible shaft, and said first driven member and flexible shaft are connected by a second adapter having a bore at an outer end thereof for receiving input shaft of said first driven member and a hollow square at its inner end for matingly slidingly receiving other end of said flexible shaft, the steps comprising

removing said first and second adapters from said flexible shaft and shafts of said first driving and driven members,

replacing said first and second adapters with third and fourth adapters respectively on said flexible shaft, said third adapter having a bore at its outer end for receiving output shaft of said second driving member and said fourth adapter having a bore at its outer end for receiving input shaft of said second driven member, and

securing said third adapter to said output shaft of said second driving member and said fourth adapter to said input shaft of said second driven member.

4,541,161

METHOD OF REMODELING CONTROL SECTION OF BACKHOE

Shizuo Shimoie, Sakai, Japan, assignor to Kubota, Ltd., Osaka, Japan

Filed Oct. 31, 1983, Ser. No. 547,527

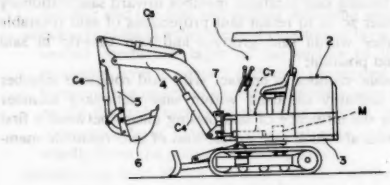
Claims priority, application Japan, Jul. 22, 1983, 58-134554

Int. Cl.⁴ B23P *7/00*; **E02F** *5/02*

U.S. Cl. 29—401.1 **1 Claim**

1. A method of remodeling a control section of a backhoe by which a basic interlocking structure (A) operatively connecting, by a rod interlocking mechanism, two hand levers (8*a*,8*b*) oscillatable crosswise to four backhoe implement control valves (V4–V7) selectively and simultaneously, is remodeled

into a modified interlocking structure (B, C) providing an interlocking relationship different from said particular interlocking relationship, said method comprising adding a relay unit (23) including relay rotary sleeve shafts and rotary shafts (18*a*, 18*b*, 20) rigidly attached to a carrier base (22) to extend in two parallel rows, and operatively connecting said rotary



sleeve shafts and rotary shafts (18*a*, 18*b*, 20) selectively to drive rods (24*a*–24*e*) which are pushed or pulled by an oscillation in one direction of one of said hand levers (8*a*, 8*b*), respectively, and to driven rods (25*a*–25*d*) operatively connected to those of said valves (V4–V7) which should be actuated by said drive rods (24*a*–24*e*), respectively.

4,541,162

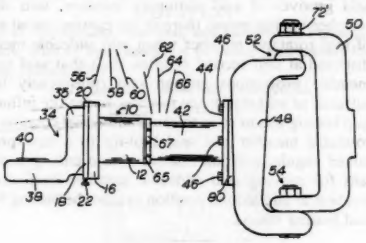
METHOD FOR WHEEL ALIGNMENT

Stanley Halvin, 5869 Cherry Ave., Long Beach, Calif. 90805

Filed Jun. 30, 1983, Ser. No. 509,329

Int. Cl.⁴ B23Q *17/00*; G01B *7/30*

U.S. Cl. 29—407 **3 Claims**



1. A method of correcting for misalignment of caster and camber on the wheels of an automotive vehicle comprising:

placing said vehicle on an alignment rack,

ascertaining the extent of initial misalignment of both caster and camber in the vehicle wheels,

removing said vehicle from said alignment rack,

elevating said vehicle frame to remove the vehicle weight from said vehicle wheels,

screwing onto a wheel spindle a fitting having annular internally threaded means for coupling to a wheel spindle, a first degree gauge mounted on said fitting and adjustable for horizontal orientation parallel to a wheel spindle, a second degree gauge mounted on an annular ring disposed upon said fitting in rotatable fashion relative thereto and adjustable for horizontal orientation in a plane perpendicular to said spindle,

rotation said annular ring relative to said fitting to bring said second degree gauge into a horizontal orientation,

securing said annular ring to said fitting to prevent further relative rotation between said ring and said fitting,

calculating the desired adjustments to caster and camber to correct for any misalignments in caster and camber,

installing an eccentric on a ball joint which carries said spindle,

tightening said eccentric until preloading is reached, and

tightening said eccentric further while concurrently observing camber and caster on said first and second degree gauges, respectively, until camber and caster are at an optimum with respect to said desired adjustments.

4,541,163

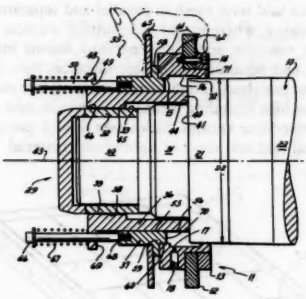
HUB STARTER FIXTURE

John C. Eiting, Minster, Ohio, assignor to Precision Strip Technology, Inc., Minster, Ohio

Filed Apr. 23, 1984, Ser. No. 603,165

Int. Cl.⁴ B23Q *3/00*

U.S. Cl. 29—426.5 **11 Claims**



1. A method of applying a hydraulically expandable hub onto the end section of a shaft when there is a very small clearance between the inside diameter of the hub and the outside diameter of the end section of the shaft, which shaft has a small diameter bearing surface on the end thereof and a shoulder between said bearing surface and said end section of said shaft, which method comprises

utilizing a fixture to position said hub relative to the axis of said shaft, said fixture having an inner ring and an outer ring slideable over said inner ring,

said inner ring having a shoulder thereon,

seating the hub onto the shoulder of the outer ring of the fixture,

sliding said inner ring of said fixture onto the bearing surface on the end of said shaft until an end face of said inner ring engages an end face of said shoulder of said shaft and thereby squares said inner ring relative to the axis of said shaft,

squeezing said hub and said outer ring so as to locate an end face of said hub against a face of said shoulder of said outer ring to thereby square said hub relative to the axis of said outer ring,

sliding said outer ring and hub over said inner ring while continuing to squeeze said hub against said face of said shoulder of said outer ring and while maintaining said end of said inner ring against the face of said shoulder of said shaft until the inside diameter of said hub is positioned over the outside diameter of said end section of said shaft.

4,541,164

INSTALLATION FOR THE MANUFACTURE BY A CONTINUOUS PROCESS OF COMPOUND PANELS FOR BUILDING CONSTRUCTION

Martín Monzón Indave, Rios Rosas, 46 - Madrid, Spain

Filed May 12, 1983, Ser. No. 493,786

Claims priority, application Spain, May 14, 1982, 512517; Apr. 18, 1983, 521573

Int. Cl.⁴ B23P *11/02*

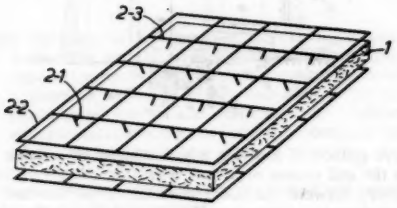
U.S. Cl. 29—430 **18 Claims**

1. Installation for the manufacture by a continuous process of compound panels for building construction, said panels being of variable cross-section and of any desire shape and

comprising a metallic framework and a lightweight core, the metallic framework consisting of a three-dimensional wire grille or grating generally presented in the form of two parallel meshes jointed by a series of connector wires welded to them, said connector wires being inclined with respect to the wires of the meshes, the lightweight core consisting of a layer of foam resin or dense box material, paperboard laminate, fiber or plastic material, provided with reinforcing walls and unresistant to a wire segment passing through it, characterized in that it comprises:

(a) a machine including an intermittent traction and advancing device located within the interim of the machine, means for providing wire mesh, and separating means to introduce said wire mesh in parallel and separated a suitable distance wherein said intermittent traction and advancing machine and said separating means introduces parallel and separated a suitable distance, two sheets of mesh and one sheet of lightweight material into one end of

(b) said machine including means for adjusting said machine to accommodate various thicknesses of said two sheets of mesh and said one sheet of lightweight material



(c) said intermittent traction and advancing device intermittently moves the two sheets of mesh and the sheet of lightweight material a regulated distance to a first section of said machine, until they are placed in front of

(d) a fastening device including a vertical battery of discharges to which

(e) a dispensing device feeds a series of connector-wire segments which are then driven by the fastening device into the sheet of lightweight material, the ends of said wire segments resting against the longitudinal wires of the two meshes which advance intermittently inside the machine;

(f) the intermittent traction and advancing device moves the unit thus constituted, with the connector wires in place, to a a second section of said machine in front of

(g) a column of electrodes for welding the connector-wire segments to the longitudinal wires of the two meshes;

(h) the intermittent traction and advancing device moves the panels, along with the imbedded connector elements, to a third section of said machine in front of

(i) a saw device containing one or more disk, band or laser beam saws which cut the panels to the desired size; and

(j) means for automatically controlling the operation of the machinery.

4,541,165

AUTOMATIC CUTTING EDGE CHANGER FOR CUTTING TOOL

Nobushige Sawai, Ibaraki; Kaneyoshi Miyasaka, Toride, and Ryoji Murata, Ibaraki, all of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Oct. 11, 1983, Ser. No. 540,568

Claims priority, application Japan, Oct. 18, 1982, 57-182498

Int. Cl.⁴ B23B *29/24*

U.S. Cl. 29—568 **19 Claims**

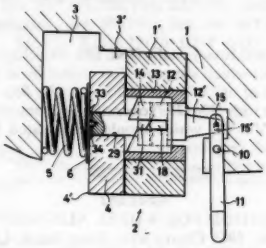
1. A mechanism for changing the cutting edges of a workpiece cutting-tool tool-tip, comprising:

a stationary member having a plurality of grooves defined therein, and a plurality of guide surfaces inclined transversely with respect to said grooves;

a rotatable member, upon which said cutting-tool tool-tip is fixedly disposed, having a set of projections for disposition within said grooves of said stationary member so as to lock said tool-tip within a predetermined angular position relative to said cutting tool;

means biasing said rotatable member toward said stationary member so as to retain said projections of said rotatable member within said grooves and said tool-tip in said locked position;

a slideable member in contact with said rotatable member and slideably disposed within said stationary member under the influence of said biasing means between a first position at which said projections of said rotatable mem-



ber are disposed within said grooves of said stationary member, and a second position at which said projections of said rotatable member are disposed freely outside of said grooves of said stationary member, said slideable member having means thereon for causing initial rotation of said rotatable member when said slideable member is disposed at said second position such that said rotatable member projections engage said transversely inclined surfaces of said stationary member under the influence of said biasing means so as to cause additional rotation of said rotatable member and said tool-tip to a new predetermined angular position relative to said cutting tool; and

means for moving said slideable member from said first position to said second position against the biasing force of said biasing means.

4,541,166

METHOD OF MAKING SEMICONDUCTOR DEIVCE USING A CONDUCTIVE LAYER AS MASK

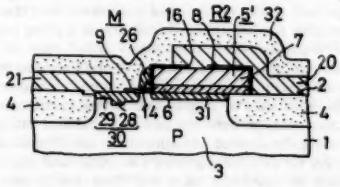
Shunpei Yamazaki, Tokyo, Japan, assignor to SemiConductor Energy Laboratory Co., Tokyo, Japan

Division of Ser. No. 304,882, Sep. 23, 1981,. This application Jun. 9, 1983, Ser. No. 502,629

Claims priority, application Japan, Sep. 24, 1980, 55-132528; Sep. 24, 1980, 55-132529; Sep. 24, 1980, 55-132530

Int. Cl.⁴ H01L *21/283*

U.S. Cl. 29—571 **8 Claims**



1. A method of making a semiconductor device, comprising the steps of;

forming a layer member in a predetermined pattern on a major surface of a semiconductor substrate of a first conducting type;

forming a first insulating layer on the layer member extending on a first side surface of the layer member and a second insulating layer on the major surface of the semiconductor substrate extending from the first insulating layer;

forming a first conductive layer extending on the layer member and the first and second insulating layers;

selectively etching away the first conductive layer to form a second conductive layer on the surface of the second insulating layer in contact with only the second insulating layer and the region of the first insulating layer extending on the first side surface of the layer member, the second conductive layer having a marginal edge extending upwardly from the second insulating layer;

introducing, from above the major surface of the semiconductor substrate, an impurity of a second conductivity type reverse from the first conductive type into the semiconductor substrate using the second conductive layer as a mask to form a first semiconductor region of the second conductivity type in the semiconductor substrate, the first semiconductor region having a marginal edge extending downwardly from the major surface such that the latter marginal edge is substantially aligned with the marginal edge of the second conductive layer and extending from its marginal edge away from the second conductive layer.

4,541,167

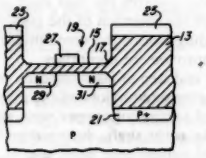
METHOD FOR INTEGRATED CIRCUIT DEVICE ISOLATION

Robert H. Havemann, Garland, and Gordon P. Pollack, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 12, 1984, Ser. No. 570,145

Int. Cl.⁴ H01L *21/76*

U.S. Cl. 29—576 W **3 Claims**



1. A method for forming a semiconductor device comprising the steps of:

(a) providing a silicon substrate;

(b) forming a silicon oxide layer over said substrate, wherein said oxide layer has a thickness on the order of 100 angstroms;

(c) forming a first layer of polycrystalline silicon over said oxide layer;

(d) forming a second layer in the form of a pattern of predetermined shape over said first polycrystalline silicon layer with a material which inhibits silicon oxidation;

(e) removing the silicon oxide and polycrystalline silicon not covered by said second layer pattern to expose a portion of said substrate;

(f) oxidizing said exposed portion of said substrate;

(g) removing the remainder of said first and second layers;

(h) forming a semiconductor device in the region wherein the remainder of said first and second layers were removed.

4,541,168

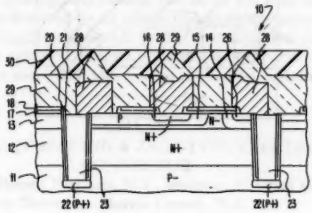
METHOD FOR MAKING METAL CONTACT STUDS BETWEEN FIRST LEVEL METAL AND REGIONS OF A SEMICONDUCTOR DEVICE COMPATIBLE WITH POLYIMIDE-FILLED DEEP TRENCH ISOLATION SCHEMES

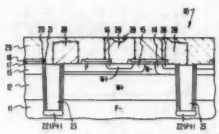
John R. Galie, Fishkill; George R. Goth, Poughkeepsie; Thomas A. Hansen, Poughkeepsie, and Robert T. Villetto, Jr., Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

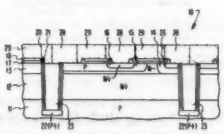
Filed Oct. 29, 1984, Ser. No. 665,829

Int. Cl.⁴ H01L *21/312, 21/76, 21/461*

U.S. Cl. 29—579 **10 Claims**







1. The method for making device metal contact studs to desired contact regions of an organic material-filled deep trench isolated semiconductor device passivated by a first dielectric layer according to a determined pattern exposing at least the desired regions of the structure where the studs are to be made, said method comprising the steps of

(a) applying a lift-off mask exposing said desired regions including at least one contact region abutting a trench, without attacking said organic fill,

(b) blanket depositing the stud forming metal onto the whole structure,

(c) lifting off said mask and the overlying metal,

(d) blanket depositing a second dielectric layer onto the whole structure, the thickness of said second layer being approximately the same as the stud height,

(e) removing said second dielectric layer until the top surface of the highest contact stud is exposed and

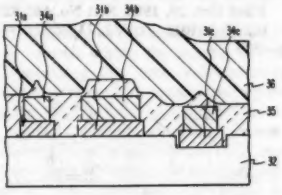
(f) polishing both the metal and said second dielectric layer to leave a substantially planarized structure ready for further personalization.

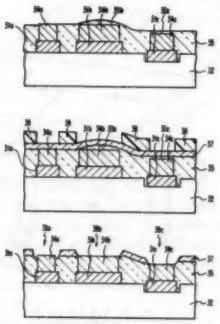
4,541,169

METHOD FOR MAKING STUDS FOR INTERCONNECTING METALLIZATION LAYERS AT DIFFERENT LEVELS IN A SEMICONDUCTOR CHIP

Thomas A. Bartush, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 29, 1984, Ser. No. 665,859
Int. Cl.[4] H01L *21/312, 21/461*
U.S. Cl. 29—591 **8 Claims**





1. In a method for making studs for interconnecting metallization layers at different levels in a semiconductor chip, the improvement including the steps of:

(a) forming metal studs at desired device contact regions of a semiconductor substrate by a lift off process with a stud mask, said studs being noncoplanar;

(b) blanket depositing a first insulating layer of a first insulating material over the entire surface of said substrate to cover the studs, said first insulating layer having a nonuniform height;

(c) depositing a planarizing material over said first insulating layer, said medium having a substantially planar upper surface;

(d) removing said material and said first insulating layer at substantially the same rate by an etching process until the most elevated of said studs is exposed while other studs remain covered;

(e) blanket depositing a second insulating layer over the entire surface of said substrate;

(f) forming and patterning an etch mask according to said stud mask over said second insulating layer;

(g) using said etch mask to selectively etch said second insulating layer at all stud locations and to etch any residue of the underlying first insulating layer where present, over the locations of said studs, in order to expose all studs at the end of this step; and,

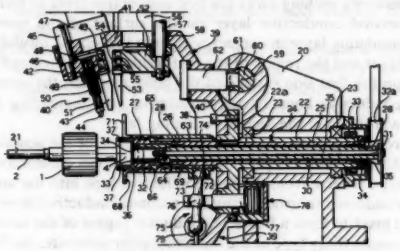
(h) applying and patterning the next level of metallization.

4,541,170

METHOD AND DEVICE FOR FORMING THE ROTOR WINDING COILS OF A DYNAMOELECTRIC MACHINE

Giorgio Barrera, Leumann, Italy, assignor to Officine Meccaniche Pavesi & C. S.p.A., Cascine Vica, Italy

Filed Mar. 8, 1984, Ser. No. 587,417
Int. Cl.[4] H02K *15/09*
U.S. Cl. 29—597 **16 Claims**



1. A method of forming the winding coils of a rotor of a dynamoelectric machine and for anchoring the ends of the coils to a commutator associated with the rotor, said dynamoelectric machine being of the type in which the said commutator and rotor each have a hollow cylindrical body and are mounted on a common shaft in positions axially spaced from each other, in which the rotor has a plurality of axially-extending radial slots for receiving the said winding coils, and in which the commutator includes a plurality of radial segments each having a slot at its end facing the rotor; said method including the steps of:

winding a copper wire in pairs of said slots in the rotor to form the said winding coils,

inserting each coil end in a said slot of the commutator, the starting end of each coil being inserted in the same slot as that in which the terminating end of the previously wound coil is inserted, and

bending the portion of copper wire that lies adjacent the end of each said coil and extends between the rotor and the commutator, towards the said shaft of the rotor immediately before the insertion of the associated coil end in the corresponding slot of the commutator,

wherein the improvement comprises:

effecting the said step of inserting each coil end in the corresponding commutator slot and the preceding step of bending the said portion of copper wire adjacent the coil end towards the rotor shaft, during the step of winding said wire in said commutator slots, and

holding the end of each said coil during the winding of the coil and before the said step of inserting the end of the coil in the corresponding commutator slot, the held coil end being moved axially from a position spaced from said rotor to a position closer to the rotor at the moment at which the said bending operation is effected.

4,541,171

METHOD OF MAKING AN ELECTRICAL TRANSFORMER

Richard D. Buckley, Watkinsville, Ga., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

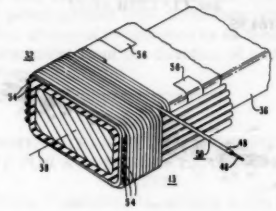
Filed Apr. 27, 1984, Ser. No. 604,668
Int. Cl.[4] H01F *41/06*
U.S. Cl. 29—605 **5 Claims**

1. A method of forming cooling ducts in the winding of an electrical transformer cooled by a liquid dielectric, comprising the steps of:

winding an electrical conductor to form an electrical winding having a plurality of conductor turns,

placing plastic tubes in the electrical winding as its conduc-

tor turns are being formed, with said plastic tubes being formed of a material dissolvable in the liquid dielectric, forming a core-coil assembly, using the electrical winding,



placing the core-coil assembly in a tank containing liquid dielectric, to form a liquid cooled electrical transformer, and dissolving the plastic tubes in the liquid dielectric.

4,541,172

IODIDE TREATMENT OF MANGANESE DIOXIDE

William P. Evans, Rocky River, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 480,693, Mar. 31, 1983,. This application Sep. 5, 1984, Ser. No. 647,395

Int. Cl.[4] H01M *6/00*

U.S. Cl. 29—623.1 **5 Claims**

1. A process for the manufacture of galvanic cells having a cathode comprising manganese dioxide, said process comprising the steps:

(a) treating manganese dioxide with an aqueous solution of at least one iodide compound selected from the group consisting of alkali metal iodides, alkaline earth metal iodides, ammonium iodide, aluminum iodide, and mixtures thereof to form a reaction mixture and surface reacting the manganese dioxide with the iodide compound until I_3^- ions are present in the reaction mixture thereby indicating that superactive acidic sites on the surface of the manganese dioxide have been inactivated;

(b) forming the treated manganese dioxide into a cathode; and

(c) inserting said cathode along with an anode and electrolyte into a cell housing.

4,541,173

AUTOMATIC FILM LOADING DEVICE

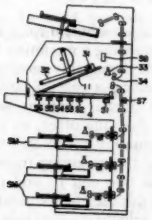
Takeyuki Sakuma, Hachioji; Masaji Nakamura, Hino, and Matsuo Mizukoshi, Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Feb. 18, 1983, Ser. No. 467,751

Claims priority, application Japan, Feb. 27, 1982, 57-28760[U]

Int. Cl.[4] B23P *19/00*

U.S. Cl. 29—806 **10 Claims**



1. An automatic film loading device characterized by comprising:

means for stopping at a predetermined position the movement of a first cassette consisting of a lid and a main body, which is inserted in a state that said lid is closed and locked into a photographic system;

means for unlocking the lid;

means for holding a plurality of cassettes other than said first cassette;

first means for detecting the size of the first cassette;

means for taking out of said plural cassettes selectively a sheet of film of a size suitable for said first cassette and loading into said first cassette:

second means for detecting whether the sheet of film of the size suitable for the first cassette is loaded into the first cassette or not; and

means for closing and locking the lid of the first cassette, which is operated by an output of said second means only when the sheet of film is loaded into said first cassette, wherein said first cassette is taken out in the unlock state when no sheet of film is loaded in the first cassette.

4,541,174

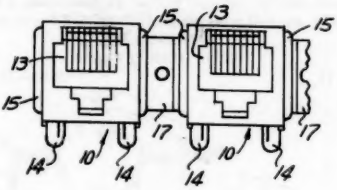
PROCESS OF MAKING A JACK-TYPE ELECTRICAL CONNECTOR

Francesco Liburdi, Endicott, N.Y., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jun. 4, 1984, Ser. No. 616,874

Int. Cl.[4] H01R *43/00*

U.S. Cl. 29—883 **1 Claim**



1. A process of making a jack-type electrical connector comprising the steps of:

molding a plurality of plastic housings connected together a predetermined distance by plastic connecting segments, each housing having: a main plug receiving opening and cavity; a recess in one outer surface of each housing adjacent said opening that includes a pair of notches, each notch located opposite the other notch; a plurality of passages between the cavity and another surface of the housing opposite said surface with the recess; and a plurality of grooves on the outside surface of the housing arranged in a predetermined manner between said passages and said recess;

stamping from a single sheet of metal a plurality of electrical conductors arranged into a plurality of groups of electrical conductors in the same spaced relationship as the passages in respective housings; said conductors including a plurality of first metal end segments and a second metal end segment, each of said first metal end segments located at one end of a respective group of electrical conductors, said second metal end segment located at the other end of said conductors to connect each group of conductors together;

forming one end portion of each group of conductors adjacent said second metal end segment into a predetermined configuration;

molding to said portion of each group of conductors formed into the predetermined configuration a respective plastic member having a pair of tabs adapted to snap into the pair of notches in the recess of a respective housing;

removing the plurality of first metal end segments from said plurality of electrical conductors to provide a plurality of free ends;

placing the free ends of each group of electrical conductors into the passages in respective housings;

forming each group of electrical conductors into the grooves in respective housings;

placing the tabs of each plastic member into the notches of a respective housing recess to retain each electrical conductor in a groove between the passages and the plastic member mounted in the housing recess; and

removing the second metal segment from said groups of electrical conductors.

4,541,175

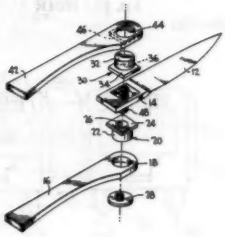
KNIFE

Francis M. Boyd, 1015 Girard St., San Francisco, Calif. 94134, and Kenneth A. Fireman, 35 Kittredge Ter., San Francisco, Calif. 94118

Filed Jul. 25, 1983, Ser. No. 517,031

Int. Cl.[4] B26B *1/04*

U.S. Cl. 30—161 **11 Claims**



2. A knife comprising

a pair of spaced handle strips,

a blade having a mounting end disposed between adjacent ends of said strips,

a non-circular, non-arcuate multi-sided aperture having at least three sides in the mounting end of said blade,

a circular opening in one of said strips disposed in axial alignment with said aperture,

a non-circular, non-arcuate multi-sided recess having at least three sides in said one strip contiguous said circular opening and facing the mounting end of said blade,

bore means in the other strip disposed in axial alignment with said circular opening and said aperture, and

a latching mechanism arranged in the same axial alignment with said circular opening and said aperture,

said latching mechanism including a non-circular, non-arcuate multi-sided member having at least three sides being normally disposed partially in said recess and partially in said aperture whereby relative rotation between said one strip and said blade is precluded, a cup-shaped element having its rim fixed to said multi-sided member and having a wall protruding through the circular opening in said one strip, and a coil spring mounted in compression between said bore means in the other strip and said wall whereby said cup-shaped element and said multi-sided member are normally biased toward a latching position,

said wall being depressed to displace said multi-sided member from said recess and into said aperture whereby said blade may be rotated from a latched closed position to a selected latched open position according to the number of alignable sides on said multi-sided member, said recess and said aperture.

4,541,176

GLASS CUTTER AND ACCESSORY

Charles L. Croce, Revere, Mass., assignor to Frank Marzeoti, Burlington, Mass.

Filed Mar. 5, 1984, Ser. No. 586,398

Int. Cl.[4] C03B *33/12*

U.S. Cl. 30—164.95 **17 Claims**

1. A glass cutter comprising:

(a) a barrel member having a through axial opening formed of two sections, one of said two sections being smooth-walled and having a smaller diameter and a shorter axial length than the second tapped section of said two sections:

(b) a holder formed with a tapered end and a stem for holding a cutter wheel at said tapered end, said stem provided with a tangential flat side facing said tapered end and designed to be received within said smooth-walled section of said barrel member;

(c) an externally-threaded shaft member provided with a concentric spring-biased shaft and an internally-threaded lock nut meshing with and axially displaceable along said externally-threaded shaft member, said shaft member designed to be received within said tapped section of said barrel member; and

(d) a finger control member provided with an axially extending sleeve designed to fit over said spring-biased shaft of said shaft member.

4,541,177

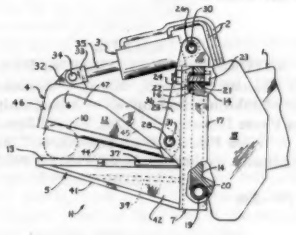
DELIMBING SHEAR

Brian Hollander, Rte. 3, Box 346, Alachua, Fla. 32615

Filed Mar. 31, 1983, Ser. No. 480,876

Int. Cl.[4] B26B *13/26, 17/00*; B23D *15/00*; A01G *23/08*

U.S. Cl. 30—180 **4 Claims**



1. A delimbing shear attachment for a moveable boom, said shear attachment comprising a mounting frame having a front face and adapted to be detachably secured to said boom, said mounting frame including a pair of laterally spaced tubular sections, one of said tubular sections being of substantially greater cross section than the other, an anvil member rigidly connected to said mounting frame and extending outwardly from the front face of the mounting frame, a cutting member pivotaly connected at one end to said mounting frame and having a cutting edge disposed in cooperating relation with the anvil member, means selectively operable to pivot said cutting member in one direction to provide an opening between the anvil member and the cutting member to receive a workpiece to be sheared and to pivot said cutting member in the opposite direction wherein the cutting edge will be urged toward en-

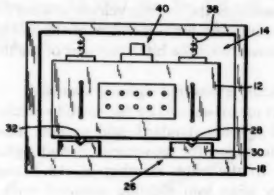
gagement with the anvil member thereby to sever a workpiece about which the shear has been positioned, said anvil and cutting members both lying in a plane extending along the length of said one of said tubular sections and being attached to said one of said tubular sections adjacent one of its ends whereby to permit a better view of the shear attachment and more effective control of its operation by an operator viewing the shear attachment from the direction of said one of said tubular sections.

4,541,178

ALIGNMENT TRANSFER AND VERIFICATION SCHEME FOR A PORTABLE LAND NAVIGATION SYSTEM

Harold V. White, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 3, 1983, Ser. No. 538,633
Int. Cl.⁴ B23B *35/00*
U.S. Cl. 33—180 R **3 Claims**



1. Apparatus for transferring attitude alignment from a portable land navigation system to a stationary structure comprising:

a. a carrier vehicle having a first housing thereon, said land navigation system including a portable element carried in said housing in accurately aligned relation;

b. means carried by said first housing and said land navigation system for assuring said accurately aligned relation, said means including a pair of rods attached to said portable land navigation system in parallel spaced relation, and, a pair of members secured to said first housing in parallel, spaced relation to receive said rods therein;

c. a second housing carried by said stationary structure to receive said portable element subsequent to said first housing; said second housing being similar to said first housing; and,

d. verification means carried on said portable element of said land navigation system for verification of alignment of said portable element in said housings.

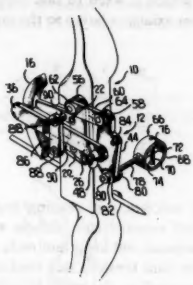
4,541,179

SIGHTING DEVICE FOR USE ON BOWS

Robert A. Closson, Rte. #1 - Box 50A, Townsend, Mont. 59644

Filed Apr. 24, 1984, Ser. No. 603,313
Int. Cl.⁴ F41G *1/00*
U.S. Cl. 33—265 **12 Claims**

1. An adjustable sight for an archery bow, said sight comprising a support having means for fixedly mounting on a bow, said support having front and rear ends, an arcuate gauge on said support at said rear end, a lever having an intermediate position pivotally mounted on said support, said lever having front and rear ends, said lever rear end carrying a pointer cooperating with said arcuate gauge, a carrier plate pivotally mounted on said lever at said lever front end, a sight unit fixedly carried by said carrier plate, and a link extending between said carrier plate and said support front end and pivotally connected thereto, the relationship of said lever, said link and the connections between said lever and said link with said support and said carrier plate being one whereby for a uniform movement of said pointer along said gauge towards an increased target distance position there is a progressive increase



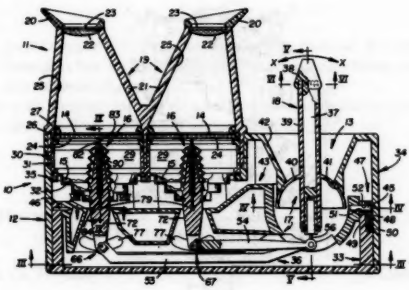
in movement of said sight unit to compensate for the increase in effect of gravity.

4,541,180

METHOD FOR CREATING AND VIEWING A COMPOSITE THREE-DIMENSIONAL DESIGN

Peter H. Stephens, 636 Stanyan St., San Francisco, Calif. 94117

Division of Ser. No. 397,088, Jul. 12, 1982, Pat. No. 4,426,784, which is a continuation-in-part of Ser. No. 245,306, Mar. 19, 1982, Pat. No. 4,343,091. This application Oct. 26, 1983, Ser. No. 545,944
Int. Cl.⁴ B43L *13/00*
U.S. Cl. 33—18 R **11 Claims**



1. A method for creating and viewing a composite three-dimensional design comprising the steps of

simultaneously creating individual and at least nearly identical designs on a ground by at least one of the steps of physically adding on and subtracting composition material from said ground, and

viewing said individual designs stereoscopically as a composite three-dimensional image.

4,541,181

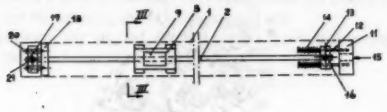
METAL TAPE TRANSDUCER FOR THE MICROMETRIC MEASUREMENT LINEAR QUANTITIES

Giacomo G. Giacomello, Via Domenichino, 50, 20149 Milano, Italy

Filed Aug. 24, 1983, Ser. No. 525,879
Claims priority, application Italy, Sep. 3, 1982, 23117 A/73
Int. Cl.⁴ G01B *11/04*
U.S. Cl. 33—125 C **7 Claims**

1. A transducer for the micrometric measurement of linear quantities, of the type comprising a support rule having ends, a thin continuous metal tape of cross-section less than 1 mm^2 on

which a plurality of measurement notches are engraved at regular micrometric intervals, said notches being engraved while said tape is under a tension at which the tape is to be maintained, and which is fixed to said support rule, a reading head which moves axially relative to the tape in order to sense



the measurement notches, said reading head being supported slidably along said support rule, means at the ends of said support rule to suspend and keep taut ends of the tape under a predetermined constant tension, said reading head comprising a guide groove coaxial to the tape, in which the tape slides freely when the head moves relative to the tape.

4,541,182

MEASURING DEVICE OF THE TRANSVERSE PROFILE OF THE HEAD OF A RAIL

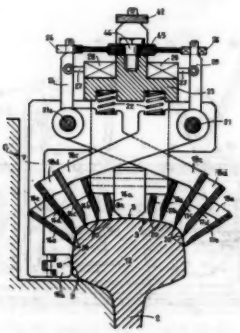
Romolo Panetti, Geneva, Switzerland, assignor to Speno International S.A., Geneva, Switzerland

Filed Dec. 9, 1983, Ser. No. 559,876

Claims priority, application Switzerland, Dec. 27, 1982, 7557/82

Int. Cl.⁴ G01B *7/28*

U.S. Cl. 33—560 **17 Claims**



1. Continuous on track measuring device of the transverse profile of the useful portion of the head of at least one rail of a railroad track comprising a bearing frame, guided by the rails, and pulled along them by means of a railroad vehicle to which it is connected through hinges permitting vertical and lateral displacements of said frame with respect to the vehicle, this bearing frame being provided with a plurality of feelers, cooperating with the surface of the head of the rail, displaced the ones with respect to the others transversely to the rail, characterized by the fact that the bearing frame comprises a guiding dihedral forming a rerefence base, the edge of which is parallel to the longitudinal axis of the rail, applied against the upper, portion of the rolling surface and against the lower portion of the internal face of the head of the rail; and by the fact that it comprises at least one hinging shaft parallel to the edge of the guiding dihedral on which are pivoted at least two mechanical feelers, measuring at least two different sidelines of the rail, provided with pin-point contact members intended to enter in contact with the rail in a measuring zone transverse to the surface of the head of the rail.

4,541,183

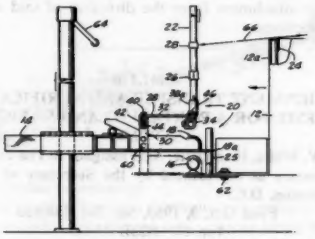
TRAILER ALIGNMENT APPARATUS

Charles K. McConnell, 5909 Bunch St., East Las Vegas, Nev.

Filed Jun. 10, 1983, Ser. No. 503,095

Int. Cl.⁴ B60Q *1/26*

U.S. Cl. 33—264 **4 Claims**



1. An alignment device for assisting the driver of a towing vehicle to maneuver the towing vehicle toward a vehicle to be towed to position the hitch member of the towing vehicle in precise alignment with the hitch member of the towed vehicle, comprising:

(a) a vertically extending sighting standard;

(b) support means carried by the towed vehicle for supporting said sighting standard, said support means including articulate means for movement of said sighting standard relative to the hitch member of the towed vehicle to precisely align said sighting standard with the vertical centerline of said hitch member of the towed vehicle; said articulate means comprising:

(i) a first generally vertically extending member adapted to be releasably carried by the towed vehicle proximate the hitch member thereof;

(ii) a second generally horizontally extending member having first and second ends said member being pivotally connected at a first end to said first member;

(iii) a third generally "L" shaped member having first and second perpendicularly extending legs, said first leg being pivotally connected to said second end of said second member;

(iv) a fourth generally "L" shaped member having first and second perpendicularly extending legs, said first leg being pivotally connected to said second leg of said third member; and

(v) a holding member for removably carrying said sighting standard, said holding member being pivotally connected to said second leg of said fourth member; and

(c) reference means carried by the towing vehicle for use by the driver of the towing vehicle during backing as a point of reference relative to said sighting standard.

4,541,184

INSOLE

Kenneth B. Leighton, Solon, Ohio, assignor to Spectrum Sports, Inc., Twinsburg, Ohio

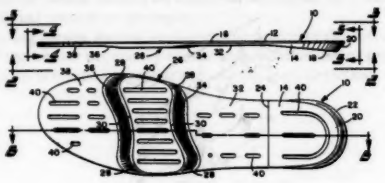
Filed Oct. 13, 1983, Ser. No. 541,589

Int. Cl.⁴ A43B *13/38, 13/40*

U.S. Cl. 36—44 **17 Claims**

1. An insole comprising an uppermost layer of abrasion-resistant material and a lower layer of shock absorbing compressible elastomeric material, said lower layer including a

wedge-shaped pad under the heel, a thickened pad under the metatarsal region, a portion of uniform thickness between said

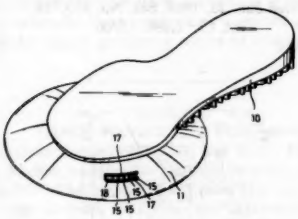


wedge-shaped heel pad and said metatarsal pad and a region of uniform thickness from the metatarsal region forward.

4,541,185
GAME SHOE

Jin-Jong Chou, No. 8, Lane 37, Cheng Kung St., She Tou Hsiang, Taiwan

Filed Sep. 26, 1983, Ser. No. 535,648
Int. Cl.[4] A43B *5/00, 7/06, 13/20*
U.S. Cl. 36—114 **9 Claims**



1. A shoe sole comprising an outsole made of a resilient material and including first projections and second projections on the bottom side thereof, each of said second projections having a skirt adhesion bottom end to contact the floor surface, wherein:

said first projections are cylindrical and different in height and width; and

said first projections are formed in such a manner that the greater the height, the smaller the width.

4,541,186
GYMNASTIC SHOE WITH CUSHIONING AND SHOCK ABSORBING INSERT

Richard J. Mulvihill, Eugene, Oreg., assignor to Nike, Inc., Beaverton, Oreg.

Filed Apr. 6, 1983, Ser. No. 482,581
Int. Cl.[4] A43B *13/38, 13/42, 5/00*
U.S. Cl. 36—114 **15 Claims**

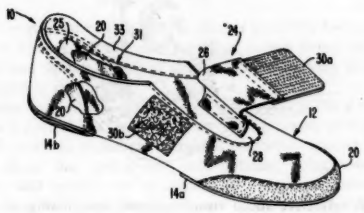
1. A lightweight, flexible gymnastic shoe comprising:

an upper formed of a lightweight synthetic fabric, said upper having an opening and a throat for the insertion of a foot into the shoe, and including toe, ball, arch and heel area corresponding to the respective portions of a wearer's foot;

a sole formed of a relatively thin resilient material and being attached to at least a portion of an outer bottom surface of said upper;

a liner located inside said upper and extending along substantially the entire length of the inside top surface of said upper, said liner being formed of a relatively low density cushioning material, said liner including a tapered portion which gradually becomes thinner from the back to the front of the toe area and a heel cup portion in which the liner extends upward around the sides and back of the heel area;

a metatarsal pad located along the liner only in the area of the first and second metatarsal heads of a wearer's foot, and a heel pad located along the liner in the heel area, said



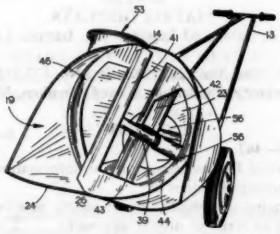
pads being formed of a shock-absorbing material different from and having a higher shock absorbing capability than the material of said liner; and

an arch support formed of a built up area of material positioned below the medial arch area.

4,541,187
SNOWBLOWER APPARATUS

W. Howard Phelps, 7528 Oakwood, Ralston, Nebr. 68127

Filed Oct. 19, 1984, Ser. No. 662,913
Int. Cl.[4] E01H *5/09*
U.S. Cl. 37—251 **4 Claims**



1. In a snowblower apparatus having a housing unit with a snow inlet portal, a blade unit at least partially disposed in said housing unit such that said blade unit can rotate in order to collect snow and discharge said snow from said housing unit, a power unit for providing power to said blade unit, and a discharge unit to direct said discharged snow, an improvement comprising providing said power unit with a drive shaft and providing said blade unit with a sleeve that may be disposed

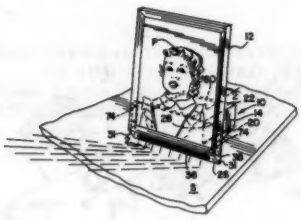
about said drive shaft and affixed thereto to allow said drive shaft to cause said blade unit to rotate, wherein said blade unit includes at least two curved blades disposed as flighting about said blade unit, and wherein one end of each said curved blade connects to a support strut affixed to a forward end of said blade unit and the remaining ends of each said curved blade affixed via a generally triangular brace element to the outboard ends of generally U-shaped scoops having one end affixed perpendicularly to said remaining ends of each said curved blade, and having their other ends radially disposed on said sleeve.

4,541,188

REFLECTIVE AUDIO ASSEMBLY AND PICTURE

George P. Sadorus, Decatur, Ill., assignor to Talkies International Corp., Decatur, Ill.

Filed Feb. 4, 1983, Ser. No. 463,978
Int. Cl.⁴ A47G *1/06*; G09F *1/12*
U.S. Cl. 40—152.1 **24 Claims**



1. A reflective audio visual assembly comprising:
a housing including a top wall, a bottom wall, side walls and a front wall, said walls defining a sound receiving enclosure;
support means for supporting said enclosure on a substantially planar surface;
means for mounting a sound speaker to direct the sound from said speaker into said enclosure at a location spaced from the front wall;
an opening in said front wall, said opening including sound deflecting means which deflects the sound which leaves said opening from said enclosure downwardly toward the planar surface upon which said housing is supported; and
picture frame means, said frame means defining at least a portion of said top wall.

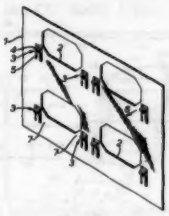
4,541,189

MATRIX DISPLAYS

Hassan P. A. Salam, 63 Lowther Rd., Barnes, London SW13, England

Filed Mar. 22, 1983, Ser. No. 477,735
Claims priority, application United Kingdom, Mar. 24, 1982, 8208689
Int. Cl.⁴ G09F *3/04*
U.S. Cl. 40—447 **29 Claims**

1. A method for manufacturing an information display device, comprising the steps of
(a) producing a generally planar matrix panel member containing an array of display apertures;
(b) providing a plurality of first bearing means on said matrix panel member adjacent said display apertures;
(c) producing a generally planar carrier member containing an array of display elements corresponding with an array of display apertures, each of said display elements including second bearing means;
(d) arranging said carrier member adjacent said panel member with said display elements opposite said corresponding aperture, respectively;
(e) connecting said first and second bearing means, whereby said display elements are adapted for rotation about an axis parallel to the plane containing said display elements



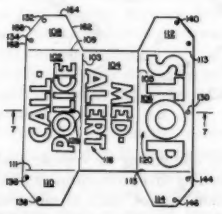
are adapted for rotation about an axis parallel to the plane containing said matrix panel member; and
(f) removing said carrier member from said panel member.

4,541,190

MULTIFACED, FOLDABLE TRAFFIC DISPLAY

Andrew Weiner, New Brunswick, and Harold M. Hodgkins, East Brunswick, both of N.J., assignors to Harold M. Hodgkins, New Brunswick, N.J.

Filed Jan. 25, 1984, Ser. No. 573,714
Int. Cl.⁴ G09F *15/00*
U.S. Cl. 40—610 **9 Claims**



1. A traffic display apparatus comprising:
a first rectangular panel;
a second rectangular panel foldably attached to said first panel along a first fold line;
a third rectangular panel foldably attached to said second panel along a second fold line;
fastening means attached to said first and third panels for selectively fastening said first and third panels to each other, said fastening means including a first and a second tab foldably attached to opposite ends of said first panel and a third and fourth tab foldably attached to opposite ends of said third panel; and,
locking means incorporated in said tabs for selectively attaching said tabs to each other,
wherein the fastening of said fastening means causes the display apparatus to assume a three dimensional shape.

4,541,191

WEAPON HAVING A UTILIZATION RECORDER

Ernest E. Morris, 4400 N. Benton Ct., and Donald J. Young, 4835 E. State Rd. 46, both of Bloomington, Ind. 47401

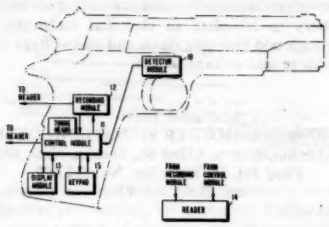
Filed Apr. 6, 1984, Ser. No. 597,541
Int. Cl.⁴ F41C *27/00*
U.S. Cl. 42—1 A **5 Claims**

1. In a hand-held weapon having a handle and means for producing an impact upon a target, the improvement in combination therewith comprising:
timing means, having an output, for producing a time signal at the output representative of elapsed time, said elapsed time

representative time signal being representative of the time of day and date;

recording means, having an input and an output, for recording a signal present at the input;

detecting means, having an output, for detecting the activation of the impact producing means, said detector means producing an activation signal at the output upon detection; and



controlling means, having inputs coupled to the outputs of said timing means and said detector means and having an output coupled to the input of said recording means, for causing the time signal to pass to the input of said recording means upon receipt of the activation signal at the input of said controlling means, whereby there is provided a record of the time at which the impact producing means of said weapon is activated.

4,541,192

HINGE DEVICE FOR FIREARMS

Rune Flodman; Lennart Flodman, and Bertil Flodman, all of Nora, Sweden, assignors to Flodman Guns KB, Nora, Sweden

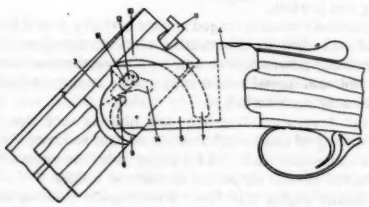
PCT No. PCT/SE82/00425, § 371 Date Aug. 12, 1983, § 102(e) Date Aug. 12, 1983, PCT Pub. No. WO83/02154, PCT Pub. Date Jun. 23, 1983

PCT Filed Dec. 14, 1982, Ser. No. 531,828

Claims priority, application Sweden, Dec. 14, 1981, 8107457

Int. Cl.⁴ F41C *11/08*

U.S. Cl. 42—40 **7 Claims**



1. A firearm of the break-open type, comprising a receiver having longitudinal side walls, a barrel assembly including a breech positioned between the receiver side walls, and a hinge device connecting the barrel assembly to the receiver side walls for pivotal movement about a transverse hinge axis, said hinge device comprising arcuate ridges having a rectangular cross-section and complementary grooves slidably receiving the ridges, said ridges and grooves being centered on the hinge axis and provided respectively on one and the other of the pair of elements constituted by said breech and said receiver side walls, said ridges and grooves comprising on each side of said breech, two ridge segments and complementary grooves, one of said two ridge segments and the complementary groove receiving it being located forwardly of the hinge axis and the other ridge segment and the complementary groove receiving it being located rearwardly of the hinge axis and having a larger radius of curvature than said one ridge segment and said complementary groove receiving it.

4,541,193

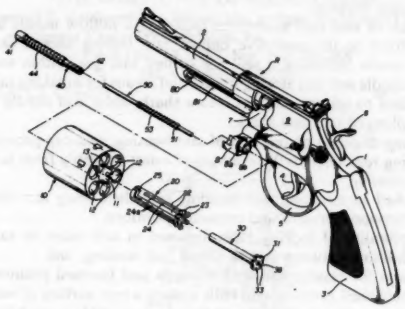
REVOLVER CYLINDER AND EXTRACTOR ASSEMBLY

George F. Flippin, P.O. Box 15741, Houston, Tex. 77020

Filed Jan. 19, 1984, Ser. No. 571,934

Int. Cl.⁴ F41C *1/00, 15/00*

U.S. Cl. 42—68 **20 Claims**



1. An improved cylinder and extractor assembly for use in a revolver having a frame and barrel to permit firing of both rimmed and rimless cartridge ammunition of varying lengths, said assembly comprising:

a cylinder carried by said frame of said revolver for rotation about a central axis thereof and having a plurality of longitudinal cartridge chambers therein at uniformly spaced intervals about the central axis, said cylinder being rotatable about said central axis to sequentially align said cartridge chambers with said barrel of said revolver, said cylinder being mounted on pivot means allowing said cylinder to pivot away from said frame so that each of said chambers is unobstructed by said frame; and

an extractor assembly centrally disposed in a central chamber of said cylinder including an extractor member having a base portion rearwardly from which extends a plurality of circumferentially spaced cantilevered extractor fingers at the distal ends of which are provided radial projections for engagement with the rim or groove of a cartridge to properly space said cartridge in a respective one of said cartridge chambers, said extractor member being axially movable, when said cylinder is pivoted away from said frame, from a first position, within said central chamber, to a second position, substantially rearwardly of said central chamber, during which any cartridges carried by said cylinder are forced out of said cartridge chambers by said extractor fingers.

4,541,194

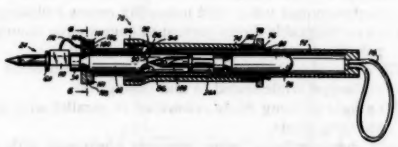
SHARK PROTECTION DEVICE

Angelo Mongiello, Jr., 1650 W. 6th St., Brooklyn, N.Y. 11223

Filed Mar. 14, 1983, Ser. No. 474,861

Int. Cl.⁴ A01K *81/04*

U.S. Cl. 43—6 **2 Claims**



1. A protective device comprising:

a housing having a plurality of holes, an interior of storage space and front and rear ends, said front end having an opening to said interior storage space,

a safety cord attached to said housing,

a plurality of sequentially arranged dart assemblies disposed in said interior storage space of said housing, each of said assemblies being provided with storing means for storing compressed gas, a first one of said sequentially arranged dart assemblies being positioned proximate to said front end of said housing, said first dart assembly having a protruding portion extending beyond said front end of said housing,

each of said dart assemblies including a hollow needle affixed to its respective one of said storing means, said needle including a seal for sealing said gas within said needle and said storing means, and means for breaking said seal to release said gas into a shark when said needle is plunged into said shark,

a cap disposed on one end of said housing, said cap providing resistance to the removal of a dart assembly from said housing,

a shell surrounding said housing, said shell being movable between forward and rearward positions,

a plurality of locking balls disposed in said holes in said housing between said shell and said housing, and

means for biasing said shell towards said forward position, said shell pressing said balls against a rear surface of said gas storing means for said first dart assembly in said forward position, said first dart assembly being held in position by said balls at said front end of said housing, said shell removing pressure against said balls in said rearward position whereby said balls are free to pass outwardly from said holes, and a second of said sequentially arranged dart assemblies is free to move to a forward position in said housing upon said first dart assembly being drawn out of said housing.

4,541,195

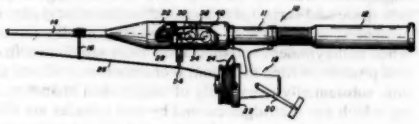
FISHING ROD INCLUDING INTEGRAL RECHARGEABLE BITE-INDICATING MEANS

Edward A. Delaney, Box 633, Marcus, Iowa 51035

Continuation-in-part of Ser. No. 252,997, Oct. 7, 1981, abandoned. This application Apr. 26, 1984, Ser. No. 604,178

Int. Cl.[4] A01K *97/12;* **H02J** *7/02*

U.S. Cl. 43—17 **4 Claims**



1. An improved balanced fishing rod, comprising:

(a) a fishing rod having a handle portion at one end thereof;

(b) fishing line guide means mounted on said rod for guiding a flexible fishing line along the length of said rod;

(c) line supply means mounted on said rod for supplying fishing line through said line guide means; and

(d) line-tension-responsive indicating means adjacent said line supply means, said indicating means being operable to produce a visual indication when the line tension exceeds a predetermined value, said indicating means including:

(1) a rechargeable direct-current voltage source having a pair of terminals sealed to said fishing rod;

(2) a charging diode enabling said voltage source to be recharged while sealed to said fishing rod;

(3) a light-emitting diode connected in parallel with said charging diode,

said charging diode being reversely positioned with respect to said light-emitting diode so that an electric current emanating from said voltage source will pass through and light said light-emitting diode and not pass through said charging diode, while an electric current emanating from a charging battery will pass through said charging diode and not said light-emitting diode to recharge said voltage source without lighting said light-emitting diode; and

(4) a pair of arms attached to said terminals and comprising line-tension responsive switch means and recharging connection means, said switch means operable when the line tension exceeds a predetermined valve for completing an electrical circuit including said voltage source and said light emitting diode, and said connection means operable when connected to an external battery to complete an electrical recharging circuit through said charging diode and said voltage source to recharge said voltage source.

4,541,196

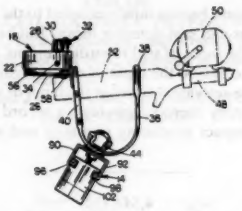
FISHING ROD HOLDER SIGNALLING DEVICE

James T. Jershin, 3309 S. 122nd St., Omaha, Nebr. 68144

Filed Jul. 11, 1983, Ser. No. 512,459

Int. Cl.[4] A01K *97/10*

U.S. Cl. 43—17 **17 Claims**



1. A signalling device for a fishing rod holder including an open topped rod support channel portion positioned forwardly of a rod receiving rim portion having an opening therethrough whereby a fishing rod handle resting on said channel portion has its rearward end inserted through said opening and urged upwardly against the top of said rim portion, said signalling device comprising,

a switch housing,

means for supporting said switch housing on said rod receiving rim portion,

an electrical circuit arranged at least partially in said housing and including an electrically actuated signal means, an electrical power source and an electrical connection between said signal means and power source including a normally open switch,

a switch lever extending from said housing such that, upon mounting of said switch housing on said rod receiving rim portion, said switch lever is engaged by the rearward end of a rod handle supported in said rod holder,

bias means urging said lever downwardly relative to said housing, and

said switch lever being operatively connected to said switch for closing said switch in response to upward movement of said lever by said rod handle against the urging of said bias means.

4,541,197

HOLLOW TELESCOPING FISHING ROD

Lloyd J. LeRoue, 726 S. 12th St., Yakima, Wash. 98901

Filed May 8, 1981, Ser. No. 261,743

Int. Cl.[4] A01K *87/00*

U.S. Cl. 43—18.1 **6 Claims**

1. A fishing rod comprising:

(a) a handle having a grip at one end, attachment means for connecting a fishing reel to the handle, a crooked neck at the other end, and an opening within the neck for receiving a line from the reel when the reel is attached to the handle;

(b) a hollow pole attached to the neck of the pole so that a

central bore of the pole aligns with the opening of the neck, the pole including a plurality of telescoping sections, each section having an inner end nearer the handle and an outer end;

(c) a grommet for each section of the pole, each grommet attached to the section only at the inner end edge of a section to allow uninterfered telescopic extension and retraction of each section along the entire length of the adjacent section, the grommets having an internal diame-

ter slightly less than the internal diameter of the bore of its respective pole section, the grommets holding the line off the inner surface of the pole, except essentially at each grommet, thereby reducing drag on the line; and

(d) releasable locking means on the neck and pole for interconnecting the pole and handle, the means including a receptacle about the innermost section of the pole and a corresponding plug attached to the crooked neck about the opening.

4,541,198

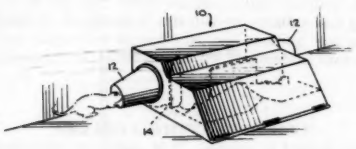
TAMPER-PROOF RODENT BAIT STATION

Daniel A. Sherman, 148 Sandpiper Key, Secaucus, N.J. 07094

Continuation-in-part of Ser. No. 509,457, Jun. 30, 1983. This application Nov. 2, 1984, Ser. No. 668,167

Int. Cl.⁴ A01M *1/20*

U.S. Cl. 43—131 **12 Claims**



1. A tamper proof rodent bait station having a base member with first and second compartments divided by a partition, said partition containing openings at each of its ends and forming a baffle that inhibits spillage of bait from the second compartment;

cover member capable of being secured to said base member by means integral with said bait station;

said bait station containing apertures which open into the first of said compartments in the interior of the bait station, the apertures marking the ends of an internal passageway extending parallel to said partition and to a wall of the bait station, the improvement comprising:

the bait station containing two tunnel members, each extending outwardly from a respective aperture on the sides to form a pathway parallel with said wall, and in line with the internal passageway, for the rodents to enter and exit the bait station;

said base including deflective baffles, each positioned partially and angularly into the passageway for providing security in relation to poisoned bait in the second compartment, while allowing a rodent to traverse the passageway freely and, to obtain line of sight from one side to the other side prior to entering the bait station; said deflective baffles providing tamper-proof protection in combination with the tunnel members, whereby, access of hands are prevented from reaching around the deflective baffles into the second compartment on the side closest to the respective tunnel member, and said tunnel members elongating the distance to the second compartment to deny access of hands from reaching through a partition opening located at the opposite side of the bait station.

4,541,199

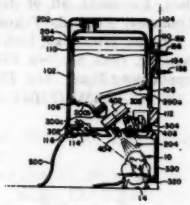
METHOD AND AUTOMATED DEVICE FOR APPLYING MEASURED AMOUNTS OF CONTROL LIQUIDS TO THE DORSAL FUR OF RODENT PESTS

Russell F. Reidinger, Jr., Exton, Pa., assignor to Monell Chemical Senses Center, Philadelphia, Pa.

Filed Oct. 13, 1982, Ser. No. 434,168

Int. Cl.⁴ A01M *25/00*

U.S. Cl. 43—131 **40 Claims**



1. A system for applying liquidous rodent population control materials such as poisons, to the fur of rodents, comprising:

(a) a housing suspendible over a suspected rodent trail;

(b) a reservoir mounted on said housing containing said materials;

(c) liquidous rodent population control materials disposed in said reservoir;

(d) rodent sensing means disposed generally above said trail for detecting the presence of a rodent in a target region located along said trail; and

(e) material dispensing means responsive to said rodent sensing means for dispensing a predetermined amount of said material from said reservoir onto a dorsal fur region of said rodent while said rodent is within said target area.

4,541,200

SWING-TILT FITTING FOR WINDOW OR DOORS

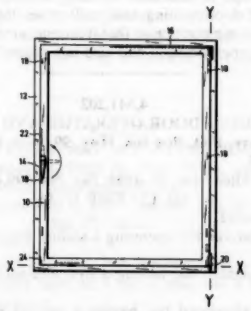
Fritz Gartner, Gundelfingen, Fed. Rep. of Germany, assignor to Josef Gartner & Co., Donau, Fed. Rep. of Germany

Filed Jun. 14, 1983, Ser. No. 504,146

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1982, 3222678

Int. Cl.⁴ E05D *15/52*

U.S. Cl. 49—192 **23 Claims**



1. In a Swing-tilt fitting for windows or the like for enabling a wing to be tilted about a first axis or swung about a second axis with respect to a frame comprising a grip operatively

associated with a linkage concealed in the wing having a three position mechanism including locking rods, tilt shears disposed rotatably on the window frame, a corner bearing, and at least two locking means disposed on the side of the swing axis of rotation and formed by a lock member secured to the linkage and a closure member secured to the window frame, an improvement comprising:

tilt arrest means operatively associated with said locking rod linkage for arresting the wing in various tilt positions.

4,541,201

SEALING STRUCTURE FOR AN AUTOMOTIVE VEHICLE WITH A SLIDING DOOR

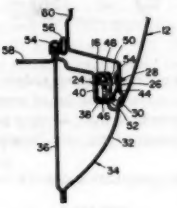
Ryuji Nishimiya, Hiratsuka; Yoshimasa Tuchiya, Ebina, and Takayo Chikaraishi, Kawasaki, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama and Nissan Shatai Company, Limited, Hiratsuka, both of, Japan

Filed Aug. 22, 1983, Ser. No. 525,501

Claims priority, application Japan, Aug. 23, 1982, 57-145850

Int. Cl.⁴ E05D *15/10*

U.S. Cl. 49—221 **8 Claims**



1. A sealing structure for an automotive vehicle comprising:

a door opening having a lower edge;

a guide rail extending along the lower edge of the door opening in said vehicle;

a sliding door having a configuration conforming to the configuration of at least part of said door opening, said sliding door including an outer door member and an inner door member having a lower edge surface opposing the lower edge of said door opening;

a slider mounted on said door adjacent the bottom thereof and slidably engaging said guide rail, whereby said guide rail guides sliding movement of said door into and out of said door opening; and

a resilient sealing member along said lower edge surface of said inner door member, said sealing member contacting said lower edge of said door opening in sliding fashion to establish a fluid-tight seal between said door and said lower edge of said door opening when said door is slid into said door opening, said resilient sealing member being mounted in a position so that it is concealed when the door is in an open position and also in a closed position.

4,541,202

SLIDING DOOR OPERATOR AND LOCK

Daryl Dockery, P.O. Box 168, Hwy. 90 West, Ponce De Leon, Fla. 32455

Filed Mar. 16, 1984, Ser. No. 590,452

Int. Cl.⁴ E05F *11/34*

U.S. Cl. 49—362 **19 Claims**

1. An apparatus for operating a sliding door in a stationary structure;

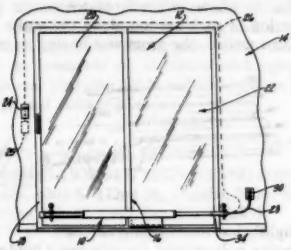
a first elongated bar having a first elongated gear-toothed rack;

a second elongated bar having a second elongated gear-toothed rack;

a housing adapted to slidably receive said first and second racks in a spaced, parallel arrangement;

a pinion gear, and first means for rotatably supporting said gear in said housing intermediate said first and second racks so that said gear engages said first and second elongated gear-toothed racks;

second means for selectively, rotatably driving said gear;



third means for securing said first elongated bar to the door, and;

fourth means for securing said second elongated bar to the stationary structure.

4,541,203

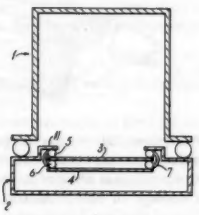
OVEN DOOR GASKET

Etienne Naffrechoux, Crepy en Valois, and Thierry Delfosse, Neuilly, both of France, assignors to Raychem Corp., Menlo Park, Calif.

Continuation of Ser. No. 206,811, Nov. 14, 1980,. This application Aug. 10, 1983, Ser. No. 521,868

Int. Cl.⁴ E06B *7/16*

U.S. Cl. 49—485 **5 Claims**



1. A gasket arrangement suitable for use in an oven, comprising: (a) at least two discrete, elongate, fibrous gaskets that are aligned substantially parallel to each other and connected together, the first of said gaskets being positionable, in use, to seal a gap between two substantially planar members of the oven; and (b) a vapour impermeable metal layer arranged to at least partly surround the first of said gaskets and extend therefrom towards another of said gaskets and to thereby prevent fumes generated within the oven from penetrating the first gasket.

4,541,204

APPARATUS FOR MANUFACTURING SUBSTANTIALLY SPHERICAL OBJECTS TO A HIGH DEGREE OF ROUNDNESS

Bobby J. Reneau, 1107 Aldine Mail Rte., Houston, Tex. 77039

Filed Jun. 9, 1983, Ser. No. 502,697

Int. Cl.⁴ B24B *11/04*

U.S. Cl. 51—90 **3 Claims**

1. An apparatus for imparting a substantially uniform spherical shape to the sealing surface of a ball valve flow control ball having diametrically opposed trunnions formed thereon coincident with a longitudinal axis through the geometric center

thereof, and having a flow control port bored therethrough transverse to the longitudinal axis, comprising:

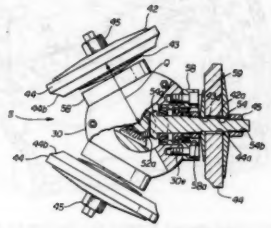
means for rotating the ball about its longitudinal axis;

a grinding head rotatable about a second axis perpendicular to the longitudinal axis of the ball and coincident with the geometric center thereof;

means for rotating said grinding head;

a plurality of shafts mounted with said grinding head and extending therefrom radially from a common point on said second axis, said shafts rotatable about their longitudinal axes;

means for rotating said shafts about their said longitudinal axes;



a grinding wheel mounted on each of said shafts a predetermined radial distance from said second axis, said wheels each having a beveled grinding surface facing said second axis for tangentially engaging the surface of the ball and each being rotatable with said shaft; and

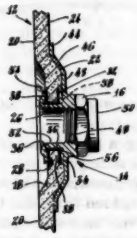
means for positioning said ball in grinding engagement with said beveled grinding surfaces of said grinding wheels with said second axis perpendicular to the longitudinal axis of the ball while simultaneously rotating the ball about the longitudinal axis thereof, rotating said grinding head about said second axis, and rotating said grinding wheels and said shafts about the longitudinal axes thereof.

4,541,205

ABRASIVE WHEEL ASSEMBLY

Joseph Patrello, Ossining, N.Y., assignor to United Abrasives, Inc., Mount Vernon, N.Y.

Filed Apr. 8, 1983, Ser. No. 483,148
Int. Cl.⁴ B24B *41/04*
U.S. Cl. 51—168 **1 Claim**



1. An abrasive wheel assembly for use on a grinding or cut-off machine comprising:

an abrasive wheel having a central aperture extending from a face portion of the wheel to a back portion of the abrasive wheel;

bushing means including a sleeve portion received within the central aperture of the abrasive wheel to provide a reinforced opening, a first flange extending radially outward from the sleeve portion along the face portion of the abrasive wheel, and a second flange extending radially outward from the sleeve portion along the back portion of the abrasive wheel, the second flange providing at least one radially directed flat slot extending from the reinforced opening to a periphery of the second flange; and

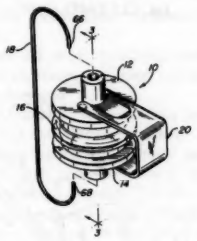
a hub having mounting means for releasably mounting the hub upon the machine, a third flange extending radially outward from the mounting means for abutment with the back portion of the abrasive wheel for facilitating alignment of the abrasive wheel, an axial extension received within the reinforced opening in the abrasive wheel, clamping means engaging the first flange to secure the hub to the abrasive wheel axially and a raised key portion extending radially relative to the axis of the hub in engagement with the flat slot of the bushing at a distance radially spaced outwardly from the axial extension to prevent rotation of the hub relative to the abrasive wheel.

4,541,206

FIXTURE FOR HOLDING AN OPTICAL LENS DURING TUMBLING

David S. Akhavi, Westwood, Calif., assignor to Iolab Corp., Covina, Calif.

Filed Oct. 17, 1983, Ser. No. 542,793
Int. Cl.⁴ B24B *31/00*
U.S. Cl. 51—217 L **21 Claims**



1. A fixture for holding an optical lens during abrasive tumbling, said lens including a central optical, a peripheral transition zone spaced radially outwardly of said central zone and an edge, said fixture comprising:

first and second generally cylindrical lens holders each having a lens-protecting surface for covering an optical surface of a lens and an exterior surface spaced axially apart from said lens-protecting surface;

resilient, unitary means for holding said lens holders with their respective lens-protecting surfaces in confronting relationship to at least the optical zone of an optical surface of said with sufficient force to substantially eliminate relative movement between said lens holders and said lens during abrasive tumbling to finish at least the edge of said lens.

4,541,207

PULL-APART MOUNTING HUB

Douglas M. Antonson, South St. Paul, Minn., assignor to Flo-Pac Corporation, Minneapolis, Minn.

Filed Feb. 6, 1984, Ser. No. 577,385
Int. Cl.⁴ B24D *9/08*
U.S. Cl. 51—376 **9 Claims**

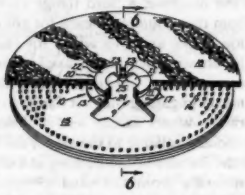
1. A pull-apart mounting hub for mounting a pad having a circular mounting hole to a drive disc on a power-driven machine, comprising:

a base mountable coaxially to the drive disc and having a generally cylindrical collar and an annular shoulder; and

a generally cylindrical, resilient split-ring retainer including: an annular lip extending radially from the retainer and

engageable with the annular shoulder of the collar to lock the retainer to the collar; and

manually operable tab means adjacent the split extending generally radially from the retainer in the opposite



direction as the annular lip for resiliently urging the annular lip adjacent the split out of engagement with the annular shoulder of the collar to enable the retainer to be removed from the collar.

4,541,208

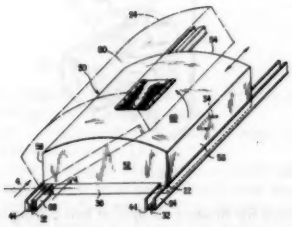
INSULATING COVER FOR PULL DOWN STAIRS

William C. Vesperman, 1919 Cypress Dr., Bel Air, Md. 21014, and Max K. Wilson, 10811 Lakespring Way, Cockeysville, Md. 21030

Filed Jul. 18, 1983, Ser. No. 514,845

Int. Cl.[4] E04D *13/08*

U.S. Cl. 52—19 **15 Claims**



1. An insulating cover adapted to enclose an opening in a building floor containing a folding stairs, said cover comprising:

(a) a pair of tracks connected to the building in spaced apart, parallel relationship to each other adjacent said opening,

(b) an inverted box-like structure of sufficient size to cover said opening and having a top, front, rear, and two side walls, said side walls being respectively positioned and slidably connected in each of said tracks whereby to cover or expose said opening, and

(c) wherein one of said side walls is pivotally connected in its associated side track and which has a projection at the lower end thereof which extends the length of the said one side wall and which, engages said track to thereby limit the travel of said box-like structure when said box-like structure is pivoted in said track about an axis extending parallel to said track to expose said opening.

4,541,209

VAULT MOUNT FOR ELECTRICAL APPARATUS

Jack E. Hoag, 12341 Rebecca La., Santa Ana, Calif. 92705, assignor to Jack E. Hoag, Santa Ana, Calif.

Filed Aug. 15, 1983, Ser. No. 522,808

Int. Cl.[4] E02D *29/14;* **H02G** *9/10*

U.S. Cl. 52—20 **5 Claims**

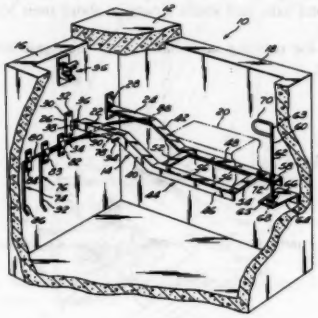
1. An apparatus for mounting a device to the walls of a vault or the like to selectively provide access to the device, comprising:

a frame having a first end and a second end;

means for pivotally mounting the first end of the frame within the vault;

means for releasably mounting the second end of the frame to a second wall of the vault to selectively retain the device within the vault; and

means for mounting the device to the frame in a first position inside the vault so that pivoting the frame about the piv-



otal mounting means rotates the device to a second position outside the vault;

spring means biased for urging the frame in pivotal movement about the pivotal mounting means to lift the device outside the vault; and

means for releasably retaining the frame against pivotal movement when the device is in the second position.

4,541,210

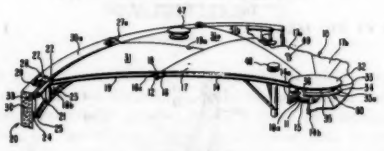
MULTIPLE RISE COVER

Lynn W. Cook, Fruit Heights, Utah, assignor to Envirotech Corporation, Salt Lake, Utah

Filed Jun. 23, 1983, Ser. No. 507,429

Int. Cl.[4] E04B *7/06*

U.S. Cl. 52—82 **20 Claims**



1. A cover for an essentially continuous closed upstanding wall comprising:

means for providing a continuous closed first thrust ring supported by said wall;

means for providing a continuous closed second thrust ring internally of and spaced from said first thrust ring;

a first set of radial rise beams extending between said first and second thrust rings at spaced radial locations;

means for connecting a first series of rise cover plates between beams of said first set of beams and between said first and second rings;

means for providing a center ring spaced inwardly from said second thrust ring;

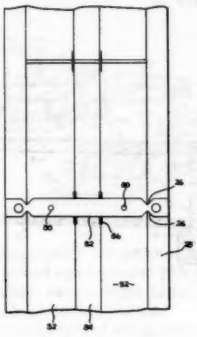
a second set of radial rise beams extending between said second thrust ring and said center ring; and

means for connecting a second series of rise cover plates between beams of said second sets of beams between said second thrust ring and said center ring.

4,541,211
INSULATED CONCRETE WALL

Dennis L. Garrett, Ft. Lauderdale, Fla., assignor to International Housing Limited, Fort Lauderdale, Fla.

Filed Mar. 21, 1983, Ser. No. 477,371
Int. Cl.⁴ E04C *2/04*
U.S. Cl. 52—98 **6 Claims**



1. An insulated concrete wall including a unitary means for simultaneously maintaining form panels in a predetermined spaced relationship and fixedly maintaining concrete wall layers interleaved between insulation wall layers in a predetermined spaced relationship comprising:

a pair of pour formed concrete walls;

a layer of insulating material sandwiched therebetween having a plurality of rectangular receiving slots defined therethrough;

a plurality of rods extending perpendicularly through said rectangular receiving slots of said insulation material, through said pour formed concrete walls, and at least some distance beyond the outer surface of each said concrete wall;

said rods having a substantially narrow cross section, such that the planer sides of said rods are adapted to abut the sides of said rectangular receiving slots of said insulated wall, and of the forms that support said concrete wall during concrete pouring;

said planer sides of said rods being further adapted to be matably received through corresponding slots defined through said insulation, and to be received by receiving slots in said form panels;

a plurality retainer means mounted on said rods, each said retainer means comprising:

a resilient rectangular plate, said plate having a rectangular aperture defined therethrough and a pair of cuts defined therethrough directed divergently from each end of said aperative, thereby forming vertical and laterial resilient flat spring flaps for allowing insertion and positioning of said rods through said insulation but preventing removal of said rods once positioned;

a pair of sawtoothed edges extending perpendicularly from the edges of said rectangular plate for being press-engaged into said insulation board;

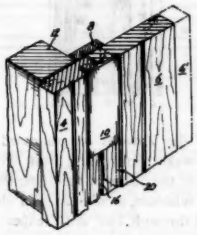
a pair of opposing cut out portions proximate to the ends of said rods to reduce the structural integrity of the rod along the reduced vertical dimension to facilitate failure thereof whereby the ends of said rod are easily snapped off after said forms are removed such that the ends of said rods remain flush and aligned with the outer surfaces of said concrete wall;

whereby said rods provide a unitary means to laterally support said forms and maintain said forms in a predetermined space relationship, and to simultaneously removably retain said insulation in a predetermined spaced relationship between said forms during concrete pouring wherein said rods provide both a permanent reinforcing means and an interconnecting means between said concrete walls and said insulation.

4,541,212
ADJUSTABLE WIDTH FRAME MEMBER FOR WALL OPENINGS

Donald MacDonald, 11615 NE. 116th St., Kirkland, Wash. 98033

Continuation-in-part of Ser. No. 444,997, Nov. 29, 1982, abandoned. This application May 7, 1984, Ser. No. 607,508
Int. Cl.⁴ E04C *3/38*; E06B *1/04*
U.S. Cl. 52—217 **8 Claims**



1. An adjustable width frame member for wall openings which comprises:

(a) first and second jamb members, each member having front and rear surfaces and inner and outer edges;

(b) a stop member; and

(c) a generally F-shaped spring means having an elongated leg portion and two transverse arms,

the stop member being permanently united to the front surface of the first jamb member so as to overhang the inner edge and form one side of a slot,

the spring means being anchored by its first transverse arm into the rear surface of the first jamb member and by its second transverse arm into the stop member, the leg portion of the spring means being oriented generally parallel to the overhanging stop member to form the other side of the slot,

the inner edge of the second jamb member being disposed in the slot so as to be slideable toward or away from the first jamb member and being gripped against the stop by the leg portion of the spring means so as to form a frame adaptable for installation on walls of varying thickness.

4,541,213
SHUTTERING ELEMENTS

Max Oetker, Burgkoppel 30a, 2400 Lübeck, Fed. Rep. of Germany

Filed Dec. 23, 1982, Ser. No. 452,765
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1981, 3151397
Int. Cl.⁴ E04B *2/38*; E04C *1/10*
U.S. Cl. 52—309.17 **2 Claims**

1. A shuttering or sheathing building construction element of rigid expanded plastics material for the concrete casing method of construction, comprising two panels arranged mutually parallel with a tongued and grooved structure at their edges and webs connecting the panels, wherein the thickness of the panel forming the outer casing is of the order or magnitude of 4 to 20 cms, the panel forming the inner casing is appreciably thinner and of the order or magnitude of 2 to 8 cms, the thinner panel thus affording more permeability to humidity and quicker heat exchange as well compared to the outer panel, and wherein the panel forming the outer casing has a wider tongued and grooved pattern than the other, thinner, panel, said webs being Z-shaped webs joining the panels,

the central section of the Z-webs being extended up to the height of the panel edges and the Z-webs having curved marginal areas which areas lie parallel to and face toward the opposite casing panel, wherein the areas of at least the panel forming the outer casing which lie opposite to said curved

marginal areas of the Z-webs are recessed, the connecting elements of the Z-webs terminating flush with the plate edge and the extremity of the connecting elements being of curved outline shape, and wherein, as seen in plan view, two adjacent Z-webs are turned through 180° with respect to each other in each element.

4,541,214

PERGOLAS

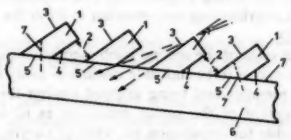
Daryl J. Lambert, 13 Toolaby Ave., Beaumont, South Australia, 5066, Australia

Filed Nov. 10, 1983, Ser. No. 550,887

Claims priority, application Australia, Nov. 12, 1982, 21134/83

Int. Cl.⁴ E06B *7/08*

U.S. Cl. 52—473 **4 Claims**



1. A pergola having light control members comprising a plurality of wooden strip, each strip being of constant cross-sectional size and shape along its length and each strip aligned in parallel relationship with adjacent strips, each strips being located a distant apart from immediately adjacent strips, the shape of strip in cross-section including two side planar faces parallel one with the other and a bottom planar face inclined to the planar faces of the sides, at least two spaced apart bearers supporting the strips and aligned in a tranversely orientated alignment with respect to the direction of elongation of the strips, each strip resting on the bearers with its bottom planar face adjoining an uppermost edge of each bearer and aligning the strip thereby, the angle of inclination of each strip, the thickness of each strip, the depth of each strip, and the distant apart of each strip being selected so that at least if the pergola top is supported in a selected orientation with respect to the axis of the earth, the rays of the sun will be substantially blocked by the strips at least during the period of the seasons that the sun is at its highest inclination but allow a substantial proportion of the rays of the sun to pass therebetween during the period of the seasons when the sun is at its lowest inclination.

4,541,215

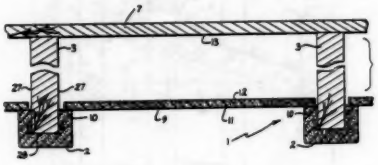
SNAP-IN CEILING SYSTEM

Charles H. Nickloy, Shawnee Mission, and Thomas H. Plunkett, Overland Park, both of Kans., assignors to Contour Packaging, Inc., Kansas City, Kans.

Continuation-in-part of Ser. No. 369,276, Apr. 19, 1982, abandoned. This application Jul. 11, 1983, Ser. No. 512,723

Int. Cl.⁴ E04B *5/52;* **E04F** *19/02*

U.S. Cl. 52—479 **7 Claims**



1. A ceiling assembly for providing a permanent ceiling with replaceable parts thereof utilizing the lower portions of a plurality of downwardly exposed smooth faced, rectangular floor joists acting as the span elements in a floor and providing transverse openings therebetween and comprised of:

(a) a gripping member having a relatively elongated body of generally rectangular outline with a planar bottom surface and planar sides perpendicular thereto; said gripping member further having a channel in the top thereof such that said gripping member has a cross-section of U-shape; said channel having spaced upwardly extending arms thereon joined by a web extending therebetween; said web being sized to cause said arms to snugly engage the sides of a wooden floor joist having a planar bottom and spaced planar sides, and said web further having a planar interior surface adapted to engage said planar bottom of said joist; said arms having a supporting lip portion associated therewith; each said lip being the planar top of said arm; said gripping member fabricated of a resilient plastic foam material having a resilient bias causing said gripping member to engage said joist; said material being stronger in compression than in tension;

(b) each said arm having on the arm interior surface thereof a wedge-shaped tooth protruding downwardly and angularly into said channel; a portion of said tooth and a portion of said arm interior surface forming a recess therebetween such that upon insertion of said joist, partial retraction of said tooth into said recess occurs and places said tooth in tension upon engagement of said gripping member to said joist; whereas upward compression of said tooth is caused by downward loads on said gripping member such that a greater disengagement force is required than for said engagement; each said tooth and its accompanying recess extending longitudinally the length of said gripping member; and

(c) a panel fabricated of a plastic material; said panel being an elongated rectangular body of substantially the same length as said gripping member and adapted to fit concealingly into the transverse opening between adjacent said joists; said panel having opposite side edges for engagement upon and support by said lip portions whereby a plurality of said gripping members engaging a plurality of said joists are capable of supportingly engaging a plurality of said panels in said transverse opening between said joists such that a ceiling assembly is formed.

4,541,216

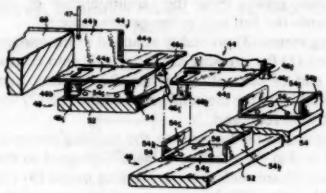
SUSPENDED CEILING SYSTEM

Thomas F. Head, Amherst, N.H., assignor to Environmental Interiors, Inc., Nashua, N.H.

Continuation of Ser. No. 278,640, Jun. 29, 1981,. This application Jan. 16, 1984, Ser. No. 570,434

Int. Cl.⁴ E04B *5/52*

U.S. Cl. 52—484 **1 Claim**



1. A suspended ceiling system comprising

A. an assembly of spaced-apart parallel stringers suspended in a horizontal plane, each stringer being formed with a pair of flat laterally extending flanges,

B. a series of rigid hooks spaced along each stringer, adjacent ones of said hooks having small side edge protuberances which project in opposite directions along the stringer, each said hook comprising a relatively small flat area of a stringer flange struck from that flange and bent downward along a line parallel to the longitudinal axis of the stringer into a plane substantially perpendicular to the stringer flanges so that the side edges of the hook face the opposite ends of the stringer, adjacent hooks in the series formed along each stringer being struck from opposite stringer flanges,

C. multiple elongated wood strips,

D. a lengthwise series of clips mounted permanently along the length of each strip, each clip having laterally spaced-apart resilient legs each of whose ends is bent back on itself to form a lip, the spacing between the legs being no greater than the width of the strip to which it is mounted and corresponding to the spacing between adjacent stringer hooks on the same stringer so that said legs can be resiliently engaged to said adjacent hooks so as to cover said hooks whereby all of the strips can be supported along both their side edges in parallel spaced-apart relation with the hooks and clips connected behind them and with said leg lips overhanging said protuberances of the rigid hooks to which they are engaged.

4,541,217

DOUBLE ROW SHINGLE ALIGNMENT FIXTURE

Franklin D. Stewart, 10101 Singing Oaks Ct., Tampa, Fla. 33615

Filed Jun. 20, 1983, Ser. No. 505,916

Int. Cl.⁴ E04D *1/00*

U.S. Cl. 52—518 **10 Claims**

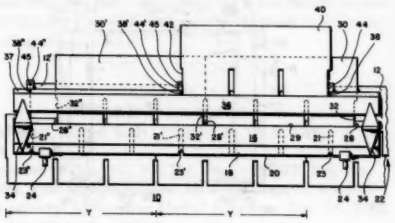
1. A double row shingle alignment fixture for aligning rows of roofing shingles, comprising:

a first longitudinal panel having a lower flange with a lower edge adapted to be aligned with a lower edge of a first row of shingles, said lower flange having a plurality of grooves therein for alignment with slots in said first row of shingles;

said first longitudinal panel further including a second flange on an opposite side thereof, having an upper surface separated from said lower edge of said lower flange by a row width dimension, for abutting with a lower edge of a second row of shingles, said second flange having a plurality of first alignment pegs thereon for alignment with slots in said second row of shingles;

said first alignment pegs being longitudinally offset from said grooves in said lower flange by a distance of substantially one-half the separation distance between adjacent ones of said slots in said first row of shingles;

a second longitudinal panel hingedly mounted to said first longitudinal panel along a longitudinal axis, said second panel being folded down on top of said second row of shingles after being fastened to the roof, said second panel having an upper flange with an upper surface separated from said upper surface of said second flange by said row



width dimension, for abutting with a lower edge of a third row of shingles, said upper flange having a plurality of second alignment pegs thereon for alignment with slots in said third row of shingles; and

said second alignment pegs being longitudinally aligned with said grooves in said lower flange, whereby said second and third rows of shingles can be aligned with said first row.

4,541,218

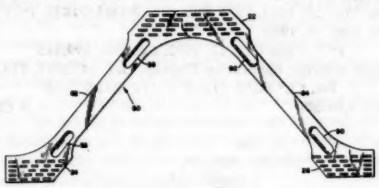
TRUSS STRUCTURES CONSTRUCTED WITH METAL WEB MEMBERS

Robert Gottlieb, Miami, Fla., assignor to Gang-Nail Systems, Inc., Miami, Fla.

Division of Ser. No. 337,671, Jan. 7, 1982, Pat. No. 4,485,606. This application May 24, 1984, Ser. No. 613,243

Int. Cl.⁴ E04C *3/292*

U.S. Cl. 52—694 **6 Claims**



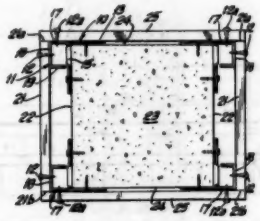
1. A metal web member for interconnecting elongated wooden members, said metal web member having a V-shaped metal web member comprising: connector plates located at the apex and at each of the extremities of said V-shaped metal member, each connector plate having struck out therefrom a plurality of teeth, all of said teeth extending from the same face of said metal web member; a leg member connected between each of said connector plates at each of said extremities and said apex, each of said legs having two grooves formed therein, said grooves being located in proximity to the opposite extremities of said leg and extending from the same side of said metal web member as said teeth and each of said legs having side flanges extending on both sides thereof for the entire length of said leg and extending in the same direction as said groove; the depth of each said flange varies along its length with said flange being deeper at its center than at its ends; and, said flanges and said grooves of each leg being formed with appropriate depths to sufficiently increase the rigidity of said metal web member for avoiding bending of said leg when subjected to normal compressive loads.

4,541,219

CLIP FOR ATTACHING SHEETS OF WALL MATERIAL TO COLUMNS AND OTHER STRUCTURAL MEMBERS

Alvin S. Parker, Two Peter Cooper Rd., New York, N.Y. 10010

Filed Jul. 22, 1983, Ser. No. 516,200
Int. Cl.⁴ E04C *3/30*
U.S. Cl. 52—713 **5 Claims**



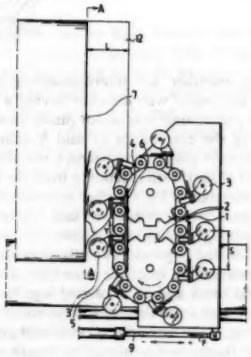
1. A clip for permanently securing preformed sheets of wall material to a structural member comprising a base member, said base member being generally L-shaped and comprising first and second leg members, said base member being provided with a pair of flanges with said leg member to form oppositely facing channels, said clip further including a support member, said support member comprising a back plate and first, second and third sidewalls, said back plate and sidewalls being sequentially attached so as to form an open-ended box-like fastener receiver assembly; said receiver assembly having a width approximately equal to that of said base member and adapted to receive fastener means for securing said preformed sheets of wall material and said back plate adapted to slidably engage the channels formed by said flanges located on said base member.

4,541,220

EDGE FOLDER

Seppo U. Rasimus, Vasamankatu 12, 57200 Savonlinna 20, Finland

PCT No. PCT/FI82/00043, § 371 Date May 25, 1983, § 102(e) Date May 25, 1983, PCT Pub. No. WO83/01429, PCT Pub. Date Apr. 28, 1983
PCT Filed Oct. 12, 1982, Ser. No. 499,145
Claims priority, application Finland, Oct. 14, 1981, 813193
Int. Cl.⁴ B65B *11/04, 49/14;* B31B *1/28*
U.S. Cl. 53—380 **6 Claims**



1. A device for folding the edge (12) of a wrapping material wound around a roll (7) against the end of the roll (7), comprising:

means for supporting said wrapped roll so that the roll axis extends in a predetermined direction;

and, a folding means mounted adjacent said roll supporting means so that said folding means is in folding position to an end of said wrapped roll, said folding means comprising:

an endless rotating means (1), such as a chain or a belt,

at least one wheel member (2) around which the rotating means (1) is arranged to rotate and for moving the endless rotating means from the circumference of the rod (7) towards the roll axis at the centre thereof,

pressing means (3) pivotably attached to the endless rotating means (1) for pressing said edge (12) into contact against the end of the roll (7) when the rotating means (1) is rotated from the circumference of the roll (7) towards the centre thereof, and

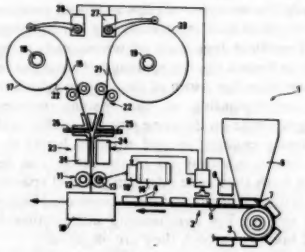
driving means (8) for driving the rotating means characterized in that the pressing means (3) pivoted to the rotating means (1) are such that the pressing means (3) when pressing the edge (12) in contact with the end of the roll (7), pivot about an axis parallel with the axis of rotation of the roll (7) to an angle determined by the circumferential velocity of the roll (7) and the speed of movement of the rotating means (1).

4,541,221

METHOD OF AUTOMATICALLY CHANGING REELS OF STRIP MATERIAL IN PACKAGING MACHINES

Enzo Seragnoli, Bologna, Italy, assignor to G.D. Societa Per Azioni, Bologna, Italy

Filed Sep. 7, 1982, Ser. No. 415,827
Claims priority, application Italy, Oct. 9, 1981, 3546 A/81
Int. Cl.⁴ B65B *57/00*
U.S. Cl. 53—396 **4 Claims**



1. A method of automatically changing reels of strip wrapping material in a packaging machine of the type in which wrapping of successive objects is accomplished by conveying the objects to a wrapping station along a conveyor line, and automatically disabling a drive to a feed device for the wrapping material by way of a disabling means for a predetermined period after detecting and removing a defective object from the conveyor line, the period being synchronized with the conveying of the objects into the wrapping station, the method comprising the steps of: sensing an approaching end of the strip material carried on a first reel and sending a corresponding output signal; actuating the disabling means in response to said output signal; and further comprising the step of feeding said output signal from said sensing and sending step to a device for controlling the removing of defective objects from the conveyor line and in response thereto ejecting at least one object from said conveyor line; sending a first resulting output from said controlling device to said disabling means; performing said actuating step in response to said first resulting output; and joining a leading end portion of strip material from a second reel to a tail end portion of the strip material from the first reel in response to said output signal while the drive to the feed

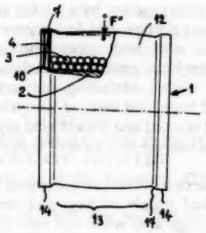
device is disabled and while said conveyor line is continually moving.

4,541,222

METHOD OF WRAPPING A SPOOL WITH METALLIC RIBBON

Arthur Joly, Auberchicourt, France, assignor to S.A. Joy & Cie, Auberchicourt, France

Filed Mar. 11, 1983, Ser. No. 474,267
Claims priority, application France, Mar. 11, 1982, 82 04648
Int. Cl.⁴ B65B *13/02*
U.S. Cl. 53—399 **4 Claims**



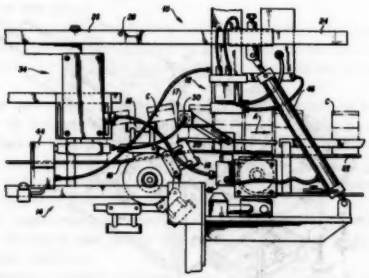
1. A method of wrapping a spool (1) having a hub (2) on which a product, such as cable, is wound, and having two radially outwardly projecting flanges (4) having a generally circular shape and provided on their periphery with a cylindrical band (7), a metal preformed ribbon (12) having marginal portions (14) and a median portion (13), said ribbon being profiled transversely such that its marginal portions (14) are disposed in a plane which is parallel to the plane of the median portion (13) and juts out from the median portion (13) of the ribbon (12), said method comprising holding said ribbon marginal portions tangent to the band (7) of the flanges (4) while the ribbon is being profiled only transversely, and winding the ribbon around the spool with the marginal portions (14) on the band (7) of the flanges (4) while deforming the ribbon elastically to apply stresses on the median portion (13) of the ribbon in such a way as to cause the median portion to bulge outwardly.

4,541,223

ANTI-JAM SYSTEM FOR A PACKAGING MACHINE

Kelly R. Childers, Rte. 3 Box 464, Somerset, Ky. 42501

Filed Dec. 20, 1983, Ser. No. 564,071
Int. Cl.⁴ A41F *17/00*
U.S. Cl. 53—411 **15 Claims**



1. An anti-jam system for a packaging machine or similar article handling machine having a conveyor defining a path of movement for the articles, comprising:

a coding assembly mounted for movement between a first position in operative engagement with the articles moving along the conveyor and a second position out of the path of the articles;

means for detecting and signaling a change in the flow of articles along the path; and

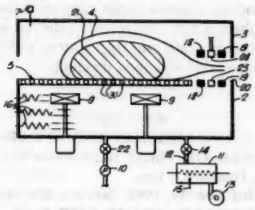
control means responsive to said signal from said detecting and signaling means, said control means for positioning of said coding assembly and moving said assembly to said second position out of the path of the articles, thereby allowing any defective article to pass and preventing a jam before returning said assembly to said first, operative position for properly coding the articles.

4,541,224

PACKING PROCESS

Giorgio Mugnai, Milan, Italy, assignor to W. R. Grace & Co., Duncan, S.C.

Continuation of Ser. No. 274,321, Jun. 16, 1981, Pat. No. 4,471,599. This application Jul. 23, 1984, Ser. No. 634,016
Claims priority, application United Kingdom, Jun. 25, 1980, 8020749; Jul. 17, 1980, 8023465
Int. Cl.⁴ B65B *31/02*
U.S. Cl. 531—434 **1 Claim**



1. A process for forming a vacuum sealed package comprising a flexible film covering at least one product article, such process comprising the steps of subjecting the unsealed package to reducing pressure at a first rate of reduction to attain an intermediate pressure at which ballooning of said flexible film away from the surface of the said at least one product article occurs; reducing the rate of pressure reduction to a second and slower rate around the package when the said flexible film is in the ballooned condition so that evacuation of the package proceeds at a slower rate; heating the said ballooned flexible film while the rate of pressure reduction is so reduced; allowing the flexible film to collapse onto the surface of said at least one product article; sealing the package; and finally increasing the pressure around the sealed package.

4,541,225

STRETCH FILM PACKAGE WRAPPING METHOD AND APPARATUS

Henry L. Byland, 4876 Parliament Way, Dunwoody, Ga. 30338

Filed Sep. 15, 1982, Ser. No. 418,548
Int. Cl.⁴ B65B *11/10*
U.S. Cl. 53—441 **11 Claims**

1. A method of automatically stretch-sealing a tray in a sheet of resilient stretch plastic film comprising:

drawing said film sheet by a free upper edge thereof across a horizontal travel path for said tray,

advancing said tray into said film sheet onto a first support means such that a free bottom edge of said film sheet is folded beneath a bottom of said tray adjacent the lead end of said tray and said film is extended over the top of the tray,

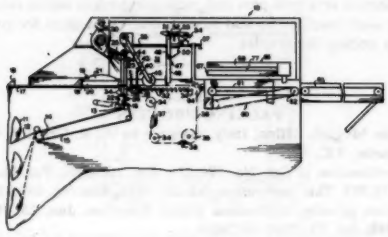
fixedly clamping a portion of said bottom edge against said tray bottom with a second support means for said tray in the form of an upwardly biased pressure plate,

contacting the top of said tray and said film sheet with a free-

wheeling roller such that tensioning of said film sheet occurs beneath said roller but said tray is prevented from tilting,

tensioning and streching said film sheet wholly about said tray from said pressure plate to said film sheet upper edge by downwardly pulling said film sheet upper edge wherein said film sheet freely moves beneath said roller,

releasing said upper edge such that said upper edge extends downwardly from the tail end of said tray, and



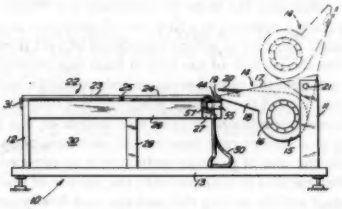
advancing an underfolder bar means horizontally between said tray bottom and said pressure plate for gripping said downwardly extending released upper edge such that the tension in said film sheet is not substantially relieved and stretching said upper edge beneath said tray bottom to form a longitudinally stretch-sealed wrapped product.

4,541,226

PACKAGING METHOD AND APPARATUS

Joseph A. Nausedas, Oak Forest, Ill., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 29, 1982, Ser. No. 454,481
Int. Cl.⁴ B65H *3/58*; B65B *43/36*
U.S. Cl. 53—459 **27 Claims**



1. A packaging apparatus for sequentially opening and filling flattened flexible packaging bags one at a time at a packaging station from a stacked supply of bags, each bag having wicket holes provided in a portion thereof adjacent to its open end, the stacked supply of packaging bags being held together by a wicket extending through the wicket holes provided in each bag, which apparatus comprises, in combination:

(a) an apparatus frame having an aft and a fore end;

(b) a packaging table mounted on said apparatus frame and adapted to be at least partially removed therefrom, said packaging table having a substantially flat, horizontal surface for holding a plurality of said packaging bags in a substantially flatwise manner adjacent to said packaging station;

(c) means provided on said apparatus frame for storing a stacked and wicket held supply of packaging bags in an area beneath said packaging table;

(d) means for positioning said wicket adjacent to said packaging station, thereby enabling a number of said packaging bags to be periodically selected and removed from the top of the stacked and wicket held supply of bags and placed on top of said packaging table for use in the packaging operation while still held on said wicket; and

(e) an air blower mounted on the aft end of said frame, said blower having a discharge nozzle for directing a stream of air towards the packaging bags placed on top of said packaging table, the air stream inflating and opening the topmost bag.

27. A method for opening flattened flexible packaging bags one at a time at a packaging station and then filling each open bag with an article to be packaged, the packaging bags being arranged in a flatwise contiguous manner one on top of the other forming a stacked supply of packaging bags, each bag having wicket holes maintained in substantial registration with the wicket holes in adjacent bags, said stacked supply of packaging bags being held together by a wicket including an upper portion and a lower portion, said lower portion of said wicket being contiguous with said upper portion and extending through said wicket holes provided in each bag, and said upper portion of said wicket extending outwardly beyond said stacked supply of bags; said method comprising:

(a) placing said stacked and wicket held supply of packaging bags within a storage area located beneath said packaging station;

(b) selecting one or more of said packaging bags from the top of said stacked supply of bags and removing the same from said storage area while still held on said wicket;

(c) guiding the selected packaging bags along the upper portion of said wicket;

(d) holding said upper portion of said wicket at a location above said stacked supply of packaging bags;

(e) placing a substantially flat, horizontal surface underneath said bags, said substantially flat, horizontal surface overlying the remainder of said stacked supply of bags held within said storage area;

(f) retaining said upper portion of said wicket in place at said packaging station;

(g) placing said selected packaging bags on top of said substantially flat, horizontal surface with the open end of said bags disposed adjacent to said packaging station; and

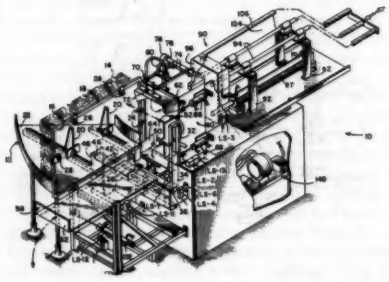
(h) directing a stream of air toward the open end of said bags so as to inflate and open each bag and then filling the inflated open bag with an article to be packaged.

4,541,227

APPARATUS FOR AUTOMATICALLY PACKING ARTICLES IN A BALE BAG

Edward F. Coad, and Carol G. Laird, both of Topeka, Kans., assignors to General Foods Corporation, White Plains, N.Y.

Filed Aug. 4, 1983, Ser. No. 520,394
Int. Cl.⁴ B65B *57/20*
U.S. Cl. 53—500 **17 Claims**



1. An apparatus for automatically packing articles into a bale bag comprising:

an article receiving position for receiving successive articles;

sensing means for sensing the presence of an article at the

article receiving position and for activating a movable pusher that is movable in a forward and backward direction for moving said article forward to an assembly position;

means forward of the assembly position for holding a plurality of closed flat-folded bale bags in stacked relationship;

means for opening a bag from the bag holding means forward of the assembly position, said means comprising means for partially opening the bag such that the partially opened bag supports the assembled articles as they are inserted into the bag to prevent the articles from tipping over;

means for counting the number of forward movements of the pusher to count the number of articles assembled; and,

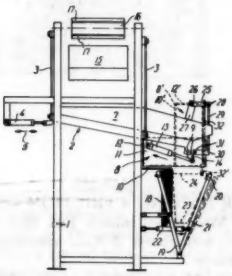
means responsive to the counting means and operable upon a predetermined number of articles being assembled for moving the pusher forwardly beyond the assembly position to insert the assembled articles as a group into the bag.

4,541,228

APPARATUS FOR PACKAGING PORTIONS OF ELONGATE ARTICLES

Gunnar C. Petersen, No. 14, Rodkildevaenget, 5230 Odense M, Denmark

Filed May 14, 1984, Ser. No. 609,801
Claims priority, application Denmark, May 25, 1983, 2352/83
Int. Cl.[4] B65B *5/06, 35/34, 43/30*
U.S. Cl. 53—572 **4 Claims**



1. Apparatus for packaging portions of elongate articles; comprising

a frame,

an elongate chute supported by the frame and having two side walls and a bottom sloping towards a lower front edge thereof,

means for supplying a portion of articles to the chute,

shaking means for imparting longitudinal oscillating movements to the chute,

an elongate, upwardly open tray having a bottom wall, two side walls pivotally supported by extensions of the chute side walls, a rear wall and an open end opposite the rear wall,

means for pivoting the tray between a loading position in which its bottom wall is substantially horizontal and its rear wall is located shortly in front of, and below, the front edge of the chute bottom, and a discharge position in which its bottom wall is substantially vertical and its open end is oriented downwards,

means for positioning an open bag with the mouth thereof below the open end of the tray when the latter is in the discharge position,

a substantially vertically oriented plate movable between an uppermost end position in which it obturates the open end of the tray when the latter assumes the loading position, and a lowermost end position in which the plate projects into the mouth of the open bag,

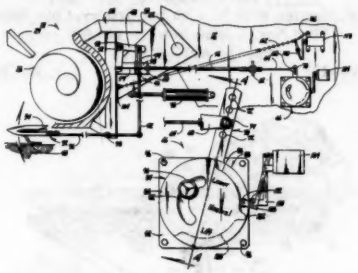
and means for shifting the plate between its end positions in timed relationship with the pivoting of the tray.

4,541,229

CONTROL SYSTEM FOR COMBINE HEADER

Jerry D. Elijah, 209-8th St., Tipton, Iowa 52772

Filed Jun. 27, 1983, Ser. No. 508,247
Int. Cl.[4] A01D *67/00*
U.S. Cl. 56—10.2 **14 Claims**



1. An improved control device for use with a combine having vehicle body, a header assembly movably mounted to said body and carrying a cutter bar, said cutter bar being movably mounted on said header assembly so as to be able to slidably engage the ground and rise and fall with changes in the terrain of the ground from a lowered position to a neutral position to an elevated position; hydraulic power means connected to said header assembly for raising and lowering said header assembly with respect to the ground; and linkage mechanism having a first end connected to said cutter bar and having a second end movable in response to movement of said cutter bar between said lowered, neutral, and elevated position; said improved control device comprising:

hydraulic pump means, valve means, and reservoir means hydraulically connected to said hydraulic power means;

said valve means having a first position for causing said power means to lower said header assembly, a second position for causing said power means to hold said header assembly stationary, and a third position for causing said power means to lift said header assembly:

electrical power means connected to said valve means for moving said valve means between said first, second and third positions;

electrical switch means connected to said electrical power means, said switch means being movable between first, second and third conditions for causing actuation of said power means to move said valve means to said first, second and third positions, respectively; and

a movable cam and cam follower means mounted on said vehicle body between said switch means and said second end of said linkage mechanism for causing said switch means to move to said first, second and third conditions in response to movement of said cutter bar to said lowered position, neutral position, and elevated position respectively, whereby said hydraulic power means will lower said header assembly, hold said header assembly stationary, and raise said header assembly in response to said cutter bar being in its lower position, neutral position and elevated position respectively;

said cam comprising a cam wheel having a cam surface thereon, said cam wheel being mounted to said vehicle body and having a lever arm attached to said second end of said linkage mechanism,

said cam follower means engaging said cam surface and being operatively connected to said switch means;

said cam surface including first, second and third portions, each of which when engaged by said cam follower means, causes said switch means to be in said first, second and third conditions respectively, each of said first, second and third portions of said cam surface having predetermined lengths;

said cam means being adjustable to permit selective adjust-

ment of the length of said second portion of said cam surface.

4,541,230

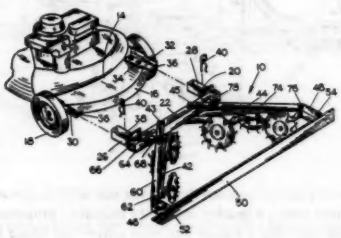
DETHATCHING ATTACHMENT FOR A POWER LAWNMOWER

Ambrose F. Huerter, 3020 W. 12th St., Greeley, Colo. 80631

Filed Nov. 5, 1984, Ser. No. 668,480

Int. Cl.[4] A01D *35/26*

U.S. Cl. 56—193 **12 Claims**



1. A dethatching attachment for a power lawnmower having a forward end, comprising,

a mounting frame means for removable attachment to the forward end of the lawnmower and extending forwardly therefrom,

spaced-apart first and second elongated supports secured to said mounting frame means extending forwardly therefrom in a diverging fashion,

a plurality of spaced-apart dethatching wheels rotatably mounted on each of said first and second supports,

said wheels being mounted on said first and second supports to as to dwell in a plane which is angularly disposed with respect to the normal direction of travel of said lawnmower,

and means mounting said wheels on said supports for moving said wheels between operative andd inopertive position,

said wheels being in operative engagement with the lawn when in their said operative position so that forward movement of said lawnmower will cause said wheels to rotate to remove thatch from the lawn.

4,541,231

PROCESS FOR REINFORCED YARN WITH GLASS FIBER CORE

Clarence O. Graham, Jr., New Orleans; Charles L. Shepard, Chalmette; George F. Ruppenicker, Jr., Kenner, and Russell M. H. Kullman, Harahan, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Aug. 26, 1983, Ser. No. 526,751

Int. Cl.[4] D02G *3/16, 3/28*

U.S. Cl. 57—12 **9 Claims**

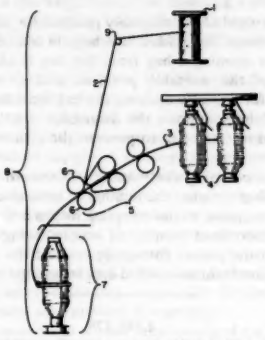
1. A process for producing knottable torque-free or balanced yarn comprising:

(a) feeding staple fiber roving through a drafting system to form a drafted strand of staple fiber;

(b) feeding glass filament yarn to the front rolls of the drafting system and placing the filament into the center of the drafted strand of staple fiber just prior to entering the front rolls;

(c) spinning the staple fiber around the glass filament core with a twist multiplier of from about 3.0 to 3.5 to assure proper adhesion of fiber to filament, and form a single yarn;

(d) ply twisting two or more of said single yarns in a direction opposite from the spinning direction to firmly lock



the staple fiber wrap to the smooth filament glass core and thus produce a torque-free or balanced yarn.

4,541,232

DEVICE FOR DRIVING A FRICTION SPINNING UNIT

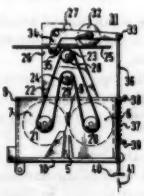
Hans Raasch, Monchen-Gladbach, Fed. Rep. of Germany, assignor to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed May 14, 1984, Ser. No. 609,773

Claims priority, application Fed. Rep. of Germany, May 13, 1983, 3317368

Int. Cl.[4] D01H *1/241, 1/20, 1/135*

U.S. Cl. 57—104 **14 Claims**



1. In a friction spinning machine having a plurality of friction spinning units, each of the spinning units including two rotatable parts forming a spinning wedge, and two whorls each being connected to a respective one of the rotatable parts, the improvement comprising a device for driving the rotatable parts, said driving device including a common endless belt wound around both of the whorls, a drive roller around which said endless belt is wound for transmitting the belt drive, a tangential belt guided along the length of the friction spinning machine, and means for engaging and disengaging frictional contact between said tangential belt and said endless belt.

4,541,233

METHOD AND DEVICE FOR STARTING THE OPERATION OF A FRICTION-SPINNING MACHINE UNIT

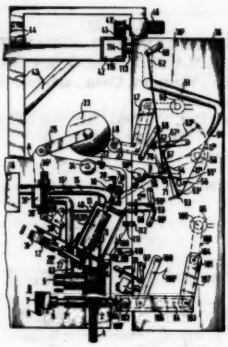
Hans Raasch; Heinz-Georg Wassenhoven, and Josef Derichs, all of Monchen-Gladbach, Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed May 14, 1984, Ser. No. 609,774

Claims priority, application Fed. Rep. of Germany, May 13, 1983, 3317361

Int. Cl.[4] D01H *15/02*

U.S. Cl. 57—263 25 Claims



1. Method of starting the operation of a friction spinning unit having friction surfaces displaceable in opposite directions and forming a spinning wedge, the spinning unit further having a fiber infeeding device, a thread take-up device for drawing a thread longitudinally through the spinning wedge, and at least one suction device acting upon the spinning wedge, at least one of the friction surfaces being formed by a sieve drum, the suction device having a suction nozzle acting upon the spinning wedge by sucking air through the wall of the sieve drum, which comprises:

(a) stopping the fiber infeed, and stopping the displacement of the friction surfaces;

(b) stopping the flow of suction air from the spinning wedge through the wall of the sieve drum into the suction nozzle;

(c) introducing into the spinning wedge through the wall of the sieve drum a suction air flow in a direction opposing the direction in which the thread is being drawn, and guiding the air flow out of the suction nozzle through the wall of the sieve drum and in a direction opposing the direction in which the thread is being drawn, along the spinning wedge, and out of the spinning wedge;

(d) after a given effective duration of the suction air flow, introducing a thread end into the spinning wedge in a direction opposing normal thread drawing direction;

(e) again applying a suction air flow from the interior of the spinning wedge through the wall of the sieve drum into the suction nozzle;

(f) restarting the fiber infeed, and displacing the friction surfaces with increasing speed in opposing directions;

(g) resuming the thread drawing, and increasing the thread drawing until normal spinning conditions are reached; and

(h) at the latest at this juncture, again stopping the suction air flow directed against the thread drawing direction.

4,541,234

METHOD AND DEVICE FOR STARTING THE OPERATION OF A FRICTION SPINNING MACHINE

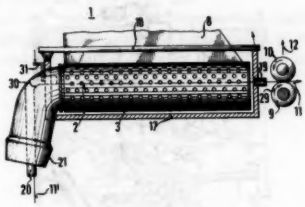
Heinz-Georg Wassenhoven, and Josef Derichs, both of Monchen-Gladbach, Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed May 21, 1984, Ser. No. 612,434

Claims priority, application Fed. Rep. of Germany, May 21, 1983, 3318701; Sep. 29, 1983, 3335211

Int. Cl.[4] D01H *15/02, 13/12*

U.S. Cl. 57—263 13 Claims



1. Method for starting the operation of a friction spinning machine, including friction surfaces movable in opposing directions for forming a spinning wedge, a device for supplying fiber to the spinning wedge, a thread withdrawal device, at least one suction device acting on the spinning wedge during the spinning operation, a suction tube disposed at an end of the machine opposite the thread withdrawal device, and a suction air source connectible to the suction device and to the suction tube, which comprises:

stopping the fiber supply and the motion of the friction surfaces;

disconnecting the suction device from the suction air source;

supplying suction air from the suction source through the suction tube at the spinning wedge for inserting a thread into the spinning wedge;

keeping the thread in a tensioned condition in vicinity of the spinning wedge;

operating the suction device with a given suction power;

moving the friction surfaces around the thread with a given speed to remove the twist of the thread at a given location;

breaking the thread with tension at the given location severing a piece of thread;

sucking the severed piece of thread into the suction tube;

resuming the fiber supply at a given rate;

moving the friction surfaces in opposing directions at a pre-determined speed greater than the given speed; and

resuming a normal state of the machine for the spinning operation by supplying the fiber at a rate greater than the given rate, increasing the suction power of the suction device beyond the given suction power, increasing the speed of motion of the friction surfaces to a speed above the predetermined speed, and increasing the thread withdrawal speed.

4,541,235

METHOD AND DEVICE FOR STARTING THE OPERATION OF A FRICTION-SPINNING UNIT

Hans Raasch, Monchen-Gladbach, Fed. Rep. of Germany, assignor to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed May 21, 1984, Ser. No. 612,445

Claims priority, application Fed. Rep. of Germany, May 21, 1983, 3318687

Int. Cl.[4] D01H *15/02, 13/12*

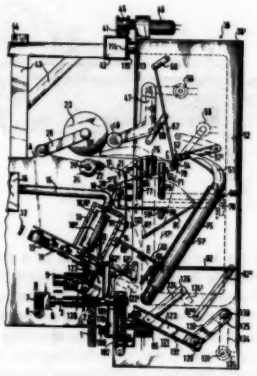
U.S. Cl. 57—263 10 Claims

1. Method of starting the operation of a friction spinning unit having friction surfaces displaceable in opposite directions and forming a spinning wedge, the spinning unit further having a

fiber infeeding device, a thread take-up device for drawing a thread longitudinally through the spinning wedge, and at least one suction device acting upon the spinning wedge, at least one of the friction surfaces being formed by a sieve drum, the suction device having a suction nozzle acting upon the spinning wedge by sucking air through the wall of the sieve drum, which comprises, by means of an automatic thread joining device:

(a) laying a thread into the spinning wedge;

(b) initiating the infeed of spinning fibers into the spinning wedge;



(c) connecting the friction surfaces with a thread-joining drive arrangement, and moving the friction surfaces in opposite directions with increasing speed;

(d) continuously withdrawing the thread from the spinning wedge, and conducting it to a waste collector;

(e) interrupting the travelling thread at the time when it is presumably free of undesirable thick and thin portions; and

(f) conducting the thread end newly formed by the interruption to a thread collection location.

4,541,236

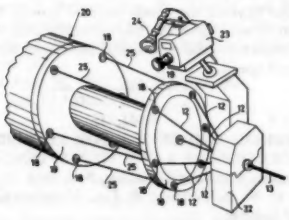
DEVICE FOR SENSING THE TENSION IN THE INDIVIDUAL THREADS IN A STRANDING MACHINE

Giorgio Dallolio, Segrate, Italy, assignor to Redaelli Tecna Meccanica S.p.A., Dervio, Italy

Filed Sep. 14, 1983, Ser. No. 532,152

Int. Cl.[4] D01H *13/16*

U.S. Cl. 57—264 **8 Claims**



1. A device for sensing the tension of threads in a rotating head of a stranding machine of the type in which thread is fed from a plurality of reels provided with tension regulating means and having a free portion for the thread on the rotating head, said device comprising a sensor for sensing spacial deflection of said free portion at a predetermined angular position of the rotating head, a means for activating said sensor when a thread is in a position corresponding to said angular position of the rotating head, and a control means capable of responding to a signal produced by the sensor corresponding to said spacial deflection.

4,541,237

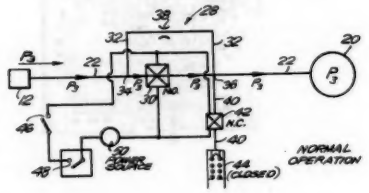
SUB-IDLE SPEED CONTROL APPARATUS FOR AN AIRPLANE TURBINE ENGINE

Thomas A. Dickey, Westport, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Oct. 17, 1983, Ser. No. 542,631

Int. Cl.[4] F02C *9/28*

U.S. Cl. 60—39.281 **7 Claims**



1. A sub-idle speed control apparatus for reducing the thrust of a turbine engine of an airplane, said engine including a compressor, a pressure sensing means in communication with said compressor through a fluid pressure line for sensing the compressor discharge pressure, and a fuel control system in communication with said pressure sensing means for supplying fuel to the engine in proportion to the compressor discharge pressure, said sub-idle speed control apparatus comprising:

a normally open valve means intermediate said fluid pressure line;

a by-pass line in communication with said fluid pressure line intermediate said normally open valve means and said compressor, and intermediate said normally open valve means and said pressure sensing means;

a restrictor means intermediate said by-pass line for reducing the amount of compressor discharge pressure sensed by the pressure sensing means;

a normally closed valve means in communication with the point of communication between the by-pass line and the fluid pressure line intermediate said normally open valve and said pressure sensing means;

a spring loaded valve means in communication with said normally closed valve means for maintaining the reduced amount of compressor discharge pressure; and

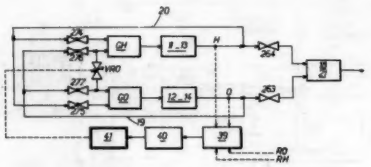
an activating means operative during the time the airplane is on the ground, for closing said normally open valve means and opening said normally closed valve means so as to divert said compressor discharge pressure through said by-pass line and said restrictor means, thus causing the pressure sensing means to sense a reduced amount of compressor discharge pressure which causes the fuel control system to supply proportionally less fuel to the engine thereby reducing said engine speed and thus reducing said thrust.

4,541,238

PROCESS FOR THE CONTROL OF THE MIXTURE RATIO OF FUEL AND OXIDIZER FOR A LIQUID FUEL MOTOR BY MEASURING FLOWS, AND CONTROL SYSTEMS FOR CARRYING OUT THIS PROCESS

Alfred K. Scheller, Palaiseau, France, assignor to Centre National d'Etudes Spatiales, France

Filed Apr. 6, 1983, Ser. No. 482,406
Claims priority, application France, Apr. 8, 1982, 82 06202
Int. Cl.[4] F02K *9/48*
U.S. Cl. 60—204 **3 Claims**



1. A process for the control of the mixture ratio of fuel and oxidizer for a rocket engine by flow measuring, comprising the steps of:

supplying fuel and oxidizer to means for generating gas;

supplying gas generated by the generating means to two turbopumps;

supplying fuel to the rocket engine by one of the turbopumps;

supplying oxidizer to the rocket engine by the other of the turbopumps;

measuring the respective flows of the fuel and oxidizer to the rocket engine;

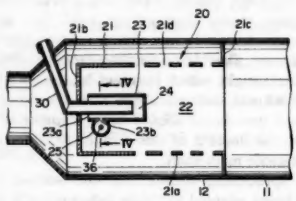
using the flow measurements to simultaneously and inversely control the operation of the turbopumps to ensure that fuel and oxidizer are delivered to the rocket engine in a proper ratio.

4,541,239

EXHAUST PURIFICATION APPARATUS

Naomi Tokura, Yokosuka, and Yoji Hasegawa, Yokohama, both of Japan, assignors to Nissan Motor Company, Ltd., Japan

Filed May 25, 1984, Ser. No. 614,061
Claims priority, application Japan, Jun. 20, 1983, 58-109283
Int. Cl.[4] F01N *3/02*
U.S. Cl. 60—286 **7 Claims**



1. An exhaust purification apparatus for use in an internal combustion engine having an exhaust conduit through which exhaust particles are discharged together with exhaust gas to the atmosphere, including a casing having an inlet connected to said exhaust conduit and an outlet connected to the atmosphere, said casing containing a trap element and a regenerative burner located upstream of said trap element, said regenerative burner comprising:

a liner located in said casing to define therein a combustion chamber opening toward said trap element, said liner being adapted to permit flow of exhaust gas from said exhaust conduit to said trap element;

a cup-shaped member located in said combustion chamber to define therein an evaporation chamber, said cup-shaped member being adapted to permit an air-fuel mixture from said evaporation chamber into said combustion chamber, said cup-shaped member being adapted to permit fuel droplets to fall downward;

a mixture conduit having an end terminating in a discharge outlet for supplying an air-fuel mixture into said evaporation chamber;

a glow plug having a portion located below said cup-shaped member within said combustion chamber for igniting the fuel droplets falling thereon when actuated;

a protective cover for covering the path of dropping of fuel droplets onto said glow plug to prevent fluid from flowing to cool down said glow plug and deviate fuel droplets away from said glow plug; and

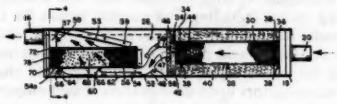
a control unit responsive to a regeneration requirement for actuating said glow plug and supplying an air-fuel mixture into said evaporation chamber through said mixture conduit.

4,541,240

EXHAUST SYSTEM FOR INTERNAL COMBUSTION ENGINES

John H. Munro, 10 Wood St., Southwick, Mass. 01077

Division of Ser. No. 171,654, Jul. 23, 1980, Pat. No. 4,393,652.
This application May 12, 1983, Ser. No. 493,930
Int. Cl.[3] F01N *3/02, 1/24, 3/20*
U.S. Cl. 60—295 **3 Claims**



1. An exhaust system for connection to exhaust gas pipes of an internal combustion engine comprising a casing adapted for flow therethrough of exhaust gases from an upstream end to a downstream end of said casing, said casing having a muffler chamber at its upstream end, an intermediate spark and moisture arrester chamber and an exhaust gas purifier chamber at its downstream end, said muffler chamber comprising a removable foraminous cartridge having an axial opening therein for flow of exhaust gases therethrough and a sound attenuating material disposed about said cartridge, said removable foraminous cartridge containing a plurality of sound attenuating chambers decreasing in size from the upstream end to the downstream end and having openings for passage of sound waves from said chambers to said sound attenuating material, said intermediate chamber being filled with a heat and corrosion resistant strand material presenting a large number of surfaces serving to filtering out sparks and moisture and further muffling exhaust gases passing therethrough, said exhaust gas purifier chamber comprising a replaceable foraminous cartridge, said foraminous cartridge having a gas permeable partition dividing said cartridge into an upper chamber and a lower chamber, a particulate exhaust gas purifying material disposed in each said chambers, and means for removably supporting said foraminous cartridge within said gas purifier chamber whereby exhaust gases pass upwardly therethrough and whereby said foraminous cartridge may be withdrawn from said chamber for inspection or replacement of said foraminous cartridge.

4,541,241

HYDRAULIC DRIVING ARRANGEMENT FOR RECIPROCABLE MASSES OR THE LIKE

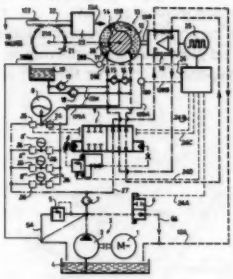
Eckehart Schulze, Weissach-Flacht, Fed. Rep. of Germany, assignor to Hartmann & Lämmle GmbH & Co. KG, Rutesheim, Fed. Rep. of Germany

Filed Feb. 17, 1983, Ser. No. 467,285

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1982, 3206162

Int. Cl.⁴ F15B *1/04, 13/04, 21/02*

U.S. Cl. 60—414 9 Claims



1. An arrangement for effecting a controlled acceleration and/or deceleration of masses comprising:

(a) a hydraulic motor having an output element which is designed to be accelerated and decelerated and is arranged to transmit motion to a mass, said motor being provided with a pair of variable-volume working chambers;

(b) a plurality of accumulators each arranged to confine a supply of hydraulic fluid at a different pressure;

(c) means for sealing said accumulators from and connecting said accumulators with said chambers, said sealing and connecting means including first conduit means for delivering hydraulic fluid from said accumu ators to said chambers so as to accelerate said output elements, and second conduit means for delivering hydraulic fluid from said chambers to said accumulators upon deceleration of said output element, and said sealing and connecting means further including a main regulating valve and a relay valve in said first conduit means, a coupling between said main regulating valve and said motor, and additional valves in said first and second conduit means including a pair of solenoid valves for each of said accumulators;

(d) a source of pressurized hydraulic fluid connected with said first conduit means;

(e) a circulating valve provided in said first conduit means between said source and said accumulators and operable to reduce the pressure of fluid in said source as a function of fluid pressure changes in at least one of said accumulators and/or as a function of fluid pressure changes in said first conduit means, said sealing and connecting means further including electronic control means for operating said main, relay, solenoid, and circulating valves and said control means being arranged to connect one of said chambers with a selected accumulator during deceleration of said output element;

(f) sump means including a receptacle for hydraulic fluid;

(g) third conduit means for discharging hydraulic fluid from a respective chamber into said sump means when the volume of the chamber is decreasing and the chamber is sealed from said accumulators; and

(h) means arranged to couple a respective chamber with said receptacle when the volume of the chamber is increasing and the chamber is sealed from said accumulators so that the chamber can draw hydraulic fluid from said receptacle, said means to couple including fourth conduit means connecting said receptacle with said chambers, and pressure-responsive one-way valve means in said fourth conduit means arranged to open when the pressure in a respective chamber is less than that in said receptacle.

4,541,242

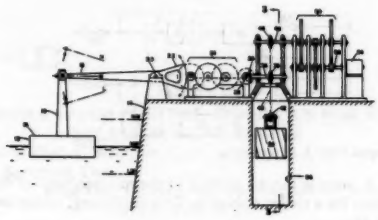
TIDE ACTIVATED GENERATOR

Randall Thompson, Jr., 3 Craige St., Cambridge, Mass. 02138

Filed Feb. 21, 1984, Ser. No. 581,828

Int. Cl.⁴ F03B *13/12*

U.S. Cl. 60—506 11 Claims



1. Apparatus for deriving energy from the rise and fall of a body of liquid to drive a rotatable main shaft associated with a power generator comprising, in combination,

float means adapted to move substantially in a vertical plane in response to said rise and fall of said body of liquid,

means associated with said float means for converting said vertical movement into reciprocating rotational movement of a first shaft,

a ratcheted differential adapted to convert said reciprocating rotational movement of said first shaft into rotational movement of a second shaft in a single direction, said ratcheted differential being associated with first gear train means for increasing the rate of rotational movement of said first or second shaft,

connecting means for communicating said rotational movement of said second shaft to a first sprocketed sheave, and

second gear train means connecting said rotatable main shaft to a second sprocketed sheave and adapted to cause a rate or rotation of said rotatable main shaft greater than the rate of rotation of said second sprocketed sheave,

said first and second sprocketed sheaves being in communication with one another by means of continuous, flexible connecting means disposed on said first and second sprocketed sheaves in non-sliding relationship therewith,

said continuous, flexible connecting means having disposed thereon a weight which is raised by the rotation of said first sprocketed sheave,

said second sprocketed sheave being capable of being rotated by the descent of said weight to cause rotation of said rotatable main shaft,

said first sprocketed sheave and said second sprocketed sheave being adapted to rotate independently in response to rate of energy derivation and energy requirement, respectively, and

said weight disposed therebetween being adapted to be raised and lowered on said continuous flexible connecting means in automatic response to difference in energy derivation and energy requirement,

whereby energy derived from the rise and fall of said body of liquid is used for: rotating said second sprocketed sheave for power output of said power generator, raising of said weight for storage of energy for later use for power output, or some combination of both, the use of said derived energy being determined automatically in response to the immediate energy requirement of said power generator.

4,541,243

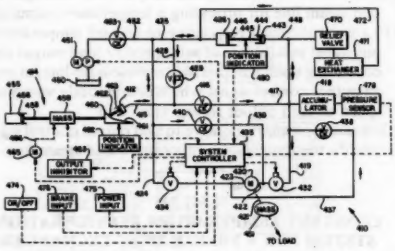
INTERNAL COMBUSTION DRIVEN PUMPING SYSTEM AND VARIABLE TORQUE TRANSMISSION

Garry E. Clark, 4605 Elmhurst Dr., Douglasville, Ga. 30135

Continuation-in-part of Ser. No. 266,933, May 26, 1981, Pat. No. 4,459,084. This application Jul. 15, 1983, Ser. No. 514,167

Int. Cl.⁴ F02B *71/04*

U.S. Cl. 60—595 **15 Claims**



1. A fluid-driven power plant, comprising: fluid handling means containing a substantially constant system volume of fluid under pressure, said fluid handling means comprising:

an output cylinder capable of a fill stroke and an output stroke;

a balance cylinder in fluid communication with said output cylinder;

means for operating said balance cylinder to deliver fluid to said output cylinder during said fill stroke;

means for operating said output cylinder to deliver fluid therefrom;

an accumulator in fluid communication with said output cylinder, the operating pressure level of said accumulator being variable; and

a fluid-driven drive motor having a first port in fluid communication with said accumulator;

said balance cylinder being responsive to increases and decreases in said operating pressure level for increasing and decreasing, respectively, the amount of said system volume of fluid available to said accumulator.

4,541,244

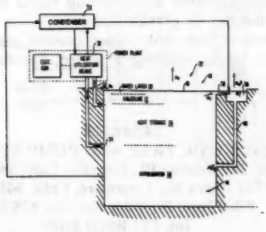
METHOD OF AND MEANS FOR MAINTAINING A HALOCLINE IN AN OPEN BODY OF SALT WATER

Gad Assaf, Rehovot, Israel, assignor to Solmat Systems Ltd., Yavne, Israel

Division of Ser. No. 134,658, Mar. 27, 1980, Pat. No. 4,440,148, which is a continuation-in-part of Ser. No. 828,190, Aug. 26, 1977, abandoned. This application Nov. 14, 1983, Ser. No. 551,709

Int. Cl.⁴ F24J *3/02;* **F03G** *7/02*

U.S. Cl. 60—641.8 **21 Claims**



1. A method for producing power from an open body of water containing dissolved salts comprising:

(a) establishing a halocline in the body of water adjacent the surface thereof and above a heat storage layer which is itself above the hypolimnion whereby solar radiation incident on the surface of the body of water is absorbed in the halocline and transferred into the heat storage layer;

(b) using heat from the heat storage layer to operate a power plant having a heat engine and a condenser;

(c) cooling the condenser with liquid drawn from the hypolimnion;

(d) cooling the heated liquid from the condenser in a cooling pond; and

(e) returning liquid in the cooling pond to the body of water at a depth below the halocline.

4,541,245

METHOD AND APPARATUS FOR CALCINING FINE GRAINED MATERIAL

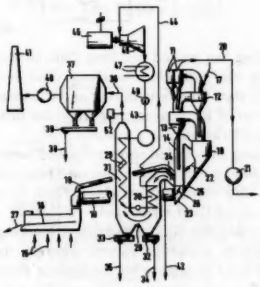
Jörgen Becker, Gummersbach; Arno Hendricks, Nümbrecht; Horst Herchenbach, Hennef; Eberhard Steinbiss, and Werner Rensinghoff, both of Cologne, all of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG and L. & C. Steinmüller GmbH, both of, Fed. Rep. of Germany

Filed Nov. 19, 1984, Ser. No. 673,109

Claims priority, application Fed. Rep. of Germany, Nov. 18, 1983, 3341695

Int. Cl.⁴ F01K *15/00;* **F27B** *15/00*

U.S. Cl. 60—648 **12 Claims**



1. A burning system for the manufacture of calcined products such as cement clinker from raw meal comprising:

a raw meal preheater,

a calciner receiving the preheated meal from said preheater,

a sintering kiln receiving calcined meal from said calciner,

a cooler receiving clinker from said sintering kiln,

a bypass conduit connected between said calciner and said sintering kiln for collecting at least a portion of the exhaust gases from said sintering kiln,

a steam generator receiving the discharge of said bypass conduit, and

means for cleaning the heating surfaces of said steam generator to thereby remove noxious substances which have condensed thereon from said exhaust gases.

4,541,246

LIMITLESS HEAT SOURCE POWER PLANTS

Yan P. Chang, 181 Sherbrooke Ave., Williamsville, N.Y. 14221

Continuation-in-part of Ser. No. 406,321, Aug. 9, 1982, abandoned. This application Dec. 5, 1983, Ser. No. 557,899

Int. Cl.⁴ F01K *17/00*

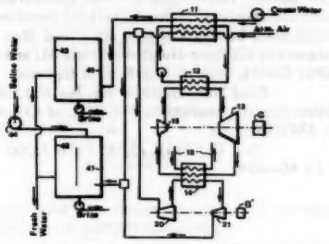
U.S. Cl. 60—648 **8 Claims**

1. A method of utilizing the thermal energy of substantially limitless heat sources which are usually considered as inert heat sources, such as the atmosphere, the ocean, a lake, a river and the like, to power a power plant including (i) first heat exchange means operatively associated with the heat sources;

(ii) a prime mover which includes a turbine and compression means operating in a closed power cycle operatively associated with the first heat exchange means, (iii) second heat exchange means operatively associated with the prime mover and (iv) an auxiliary system for starting the operation of the prime mover; said method comprising the steps of:

(a) selecting first and second heat exchange means for providing appropriate heating and cooling processes of the power cycle so that the power plant is capable of producing net work with the continuous increase of entropy in the surroundings;

(b) orienting the flow of source fluid from the heat sources so that the flow is moved by gravitational forces through the first heat exchange means wherein the source fluid heats the working fluid of the turbine and the source fluid is thereby cooled;



(c) expanding the heated working fluid in the turbine;

(d) cooling the expanded working fluid by the auxiliary system to start the prime mover and to initiate the continuous release of thermal energy from the heat sources;

(e) cutting off the auxiliary system;

(f) conducting the cooled source fluid effluent from the first heat exchange means to the second heat exchange means wherein the expanded working fluid is cooled by the cooled source fluid effluent;

(g) compressing the cooled expanded working fluid back to the first heat exchange means wherein the compressed working fluid is heated by the source fluid as recited in step (b) for repeating steps (c) and (f); and

(h) utilizing the cold source fluid effluent from the power plant for another cooling process.

4,541,247

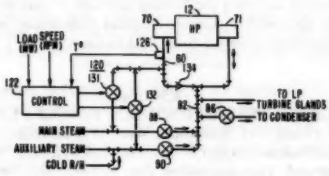
STEAM TURBINE GLAND SEAL CONTROL SYSTEM

Harry F. Martin, Altamonte Springs, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 5, 1984, Ser. No. 617,459

Int. Cl.[4] F01K *13/02*

U.S. Cl. 60—660 **7 Claims**



1. A steam turbine gland seal control system for a steam turbine driving an electrical generator which supplies power to a load after main circuit breakers are closed, and in which the gland is self-sealing by steam in the turbine after said closing, comprising:

(A) means for measuring turbine speed for providing an output signal indicative of turbine speed;

(B) means for measuring turbine load for providing an output signal indicative of load, when said circuit breakers are closed;

(C) a steam line in steam communication with said gland seal;

(D) a gland seal steam supply controllably connected to said steam line;

(E) means for measuring the temperature of steam within said steam line for providing a temperature output signal;

(F) a control circuit responsive to (a) said temperature output signal and (b) one of said speed or load output signals, depending upon whether said turbine is on-line, to provide an output control signal which continuously varies as said speed or load output signals vary; and

(G) heating means responsive to said output control signal to modify the temperature of steam in said steam line.

4,541,248

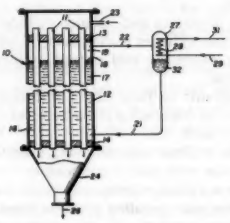
CONSTANT TEMPERATURE REFRIGERATION SYSTEM FOR A FREEZE HEAT EXCHANGER

John S. Andrepont, Lisle, and Raymond Korzonas, Chicago, both of Ill., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Dec. 15, 1983, Ser. No. 561,891

Int. Cl.[4] F17C *13/00*

U.S. Cl. 62—54 **7 Claims**



1. In a freeze concentrator comprising a plurality of freeze tubes, and a shell surrounding said freeze tubes and forming a chamber adapted to contain a boiling liquid cryogen with a vapor zone above the liquid level of the cryogen,

the improvement comprising:

a flash tank at an elevated location relative to the liquid level of said cryogen in the shell chamber;

vapor conduit means communicating from said shell chamber vapor zone to said flash tank;

condensing means associated with said flash tank for condensing the vapor of said cyrogen entering said tank, the condensed vapor being collected as liquid cryogen therein; and

liquid conduit means communicating from said flash tank to said shell chamber for returning liquid cryogen to said shell chamber by gravity flow,

said chamber, flash tank, vapor conduit means and liquid conduit means forming a sealed, substantially air-free system.

4,541,249

CRYOGENIC TRAP AND PUMP SYSTEM

Clint Graves, 241 Heather Pl., Danville, Calif. 94526, and Mario Marcon, 742 Debra St., Livermore, Calif. 94550

Filed Nov. 28, 1984, Ser. No. 675,526

Int. Cl.[4] B01D *8/00*

U.S. Cl. 62—55.5 **8 Claims**

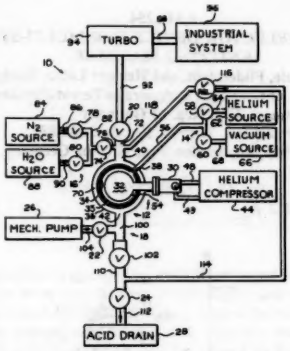
1. A cryogenic system comprising:

a cryogenic assembly including:

refrigeration means having a cold member capable of being chilled to cryogenic temperatures;

an inner enclosure surrounding said cold member to provide a sealable inner chamber with said cold member within, said inner enclosure being provided with orifice means; and

an outer enclosure surrounding said inner enclosure to provide a sealable outer chamber, said outer enclosure being provided with an inlet and an outlet communicating with said outer chamber;



thermal switch means including:

a source of thermally conductive fluid; and

means for selectively injecting and removing said thermally conductive fluid into and out of said inner chamber through said orifice means; and

flush means including:

a source of flush fluid; and

means coupling said source of flush fluid to said inlet of said outer enclosure.

4,541,250

METHOD AND APPARATUS FOR PRODUCING SNOW AT MARGINAL AMBIENT TEMPERATURES AND ELIMINATING COMPRESSED AIR LINE FREEZE-UP AND OIL CONTAMINATION

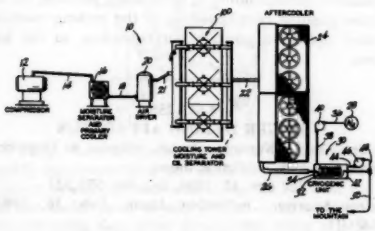
Tropeano, Joseph C.; Joseph T. Tropeano, and Thomas F. Tropeano, all of 12 Revere St., Lexington, Mass. 02173

Continuation-in-part of Ser. No. 457,259, Jan. 12, 1983, Pat. No. 4,467,614. This application Apr. 19, 1984, Ser. No. 602,020

The portion of the term of this patent subsequent to Aug. 28, 2001, has been disclaimed.

Int. Cl.[4] F25D *17/04*; B01D *53/26*

U.S. Cl. 62—532 **20 Claims**



1. In an installation for snow-making wherein a stream of compressed air and a stream of compressed water are fed from a compressor station and a pumping station via separate lines to the nozzles of snow-making equipment where said compressed air and pressurized water are mixed to produce a stream of snow particles, a method for removing condensate and oil particles from said stream of compressed air and supercooling said stream of air comprising:

providing a stream of compressed air having oil particles and a condensate therein;

cooling said stream of compressed air so as to crystallize said condensate and allow said oil particles to adhere thereto;

heating said crystallized condensate and said oil particles in a holding zone so as to liquefy said crystallized condensate;

separating out said liquid and oil particles from said stream of compressed air;

feeding said stream of compressed air free of said liquid and oil particles to a cryogenic unit; and

passing a liquefied gas through said cryogenic unit in heat exchange relationship with said compressed air so as to supercool said stream of compressed air.

4,541,251

METHOD FOR FREEZING THE NECK OF AN INVERTED CHAMPAGNE BOTTLE

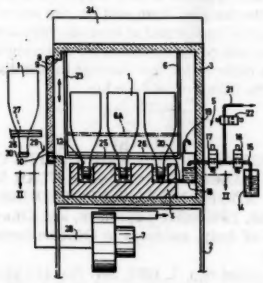
Pierre Louradour, Reims, and Alain Roullet, Villejuif, both of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Dec. 13, 1983, Ser. No. 560,955

Claims priority, application France, Dec. 31, 1982, 82 22169

Int. Cl.[4] F25D *17/02*

U.S. Cl. 62—64 **3 Claims**



1. A method for freezing a neck region of an inverted champagne glass bottle wherein precipitate settles to the neck region and is frozen for removal, comprising dipping said region into liquid nitrogen in a plurality of stages and separating said stages by periods in which said region is maintained outside the liquid nitrogen.

4,541,252

MECHANIZED SELF EVACUATING FRAGMENTARY ICE STORAGE BIN

Peter Reimer, Middlebury, Ind., assignor to Index Supply Company, Inc., La Porte, Ind.

Filed Jun. 17, 1983, Ser. No. 505,262

Int. Cl.[4] F25C *5/18*

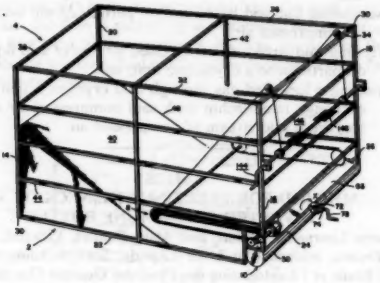
U.S. Cl. 62—344 **7 Claims**

1. A self-evacuating ice storage bin for the storage and delivery of fragmentary ice from an enclosure having a floor and side walls, said bin comprising:

supporting means adjacent the floor of said enclosure for supporting at least one ice rake assembly for pivoting movement about a pivot axis within said enclosure;

at least one ice rake assembly having a plurality of movable rake elements for contacting said ice, said at least one ice rake assembly having at least one rake arm for carrying said rake elements, said rake arm including a free end and

an attached end, said attached end being pivotably connected to said support means near the junction of said floor and one of said side walls, said at least one ice rake assembly having at least four rakes, and further including at least two rake arms for supporting said rakes, and friction reducing means for reducing friction between the rakes and rake arms, said friction reducing means being attached to each rake at the point of contact with said rake arm;



drive means for driving said plurality of rake elements so that they move along said rake arm in a direction which causes said fragmentary ice to be moved towards said attached end of said arm; and

discharge means adjacent said support means for receiving and for discharging from said bin the ice moved towards said attached end of said at least one rake arm by said rake elements, and covering means for covering said discharge means in order to prevent damage to said discharge means during the filling of said ice bin.

4,541,253

PROCEDURE FOR PROCESSING WITH CIRCULAR KNITTING MACHINES AND CIRCULAR MACHINES ADOPTING SAID PROCEDURE

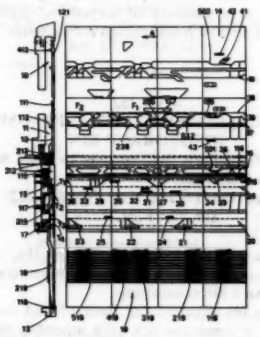
Luciano Luchi, Tavernuzze Impruneta, and Ettore Negri, Florence, both of Italy, assignors to Officine Savio Spa, Pordenone, Italy

Filed Sep. 7, 1982, Ser. No. 415,461

Claims priority, application Italy, Sep. 10, 1981, 83463 A/81

Int. Cl.[4] D04B *9/10, 9/20, 9/38, 15/68*

U.S. Cl. 66—14 **8 Claims**



1. Process for knitting hose with toe and heel in a circular machine having an upper and lower cylinder with radial cams, selection actuators, needles, more than one feed and two needle cylinders, comprising oscillating said cylinders, bringing all the needles to an upper path during production of the toe and heel with alternating motion by means of said cams, lowering at each oscillation of the cylinders those needles alone which have been selected to knit the course relative to said oscillation from said upper path towards a lower working path by cooperation between fixed radial cams located so as to correspond with the main feed and appropriate selection actuators, wherein said upper path serves to exclude the needles of the lower cylinder from knitting and to protect the needles in the upper cylinder.

4,541,254

NEEDLE SELECTOR DEVICE FOR MULTI-SYSTEM KNITTING MACHINE

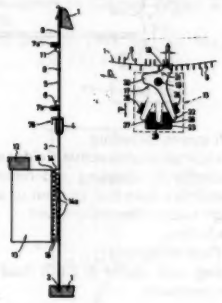
Alfred Schindele, Filderstadt, and Herbert Lotze, Stuttgart, both of Fed. Rep. of Germany, assignors to Terrot Strickmaschinen GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 7, 1983, Ser. No. 501,885

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1982, 3222744

Int. Cl.[3] D04B *15/68, 15/76*

U.S. Cl. 66—223 **6 Claims**



1. A needle selector device for use in a multi yarn feed knitting machine operating by the three-position method, with vertically stacked angularly movable sliders, and having pattern bars mounting steering butts, swivel bars engaging the pattern bars and in their turn articulately connected to the knitting needles, the sliders co-acting with the steering butts of the pattern bars and thereby determining the movement of the knitting needles into their floating, tucking or knitting position, characterized in that for each yarn feed station in the knitting machine there is provided a single row of said vertically stacked angularly movable sliders, said sliders being formed identically to one another and being movable about a common axis and being adapted to be selectively adjusted and immobilised in one of three operative positions thereof, the first operative position corresponding to the floating position, the second operative position corresponding to the tucking position and the third operative position corresponding to the knitting position.

4,541,255

JIGGER DYEING APPARATUS

Masahiro Arashi, Komatsu, Japan, assignor to Onomori Iron Works Co., Ltd., Ishikawa, Japan

Filed Feb. 15, 1984, Ser. No. 580,327

Claims priority, application Japan, Feb. 16, 1983, 58-020014[U]

Int. Cl.[4] D06B *3/32*

U.S. Cl. 68—22 R **10 Claims**

1. A jigger dyeing apparatus comprising:

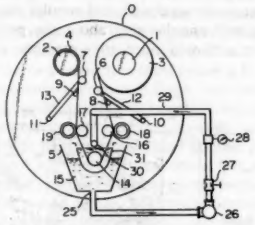
a dyeing solution box having a quantity of dyeing solution therein;

a dyeing box positioned within said dyeing solution box said dyeing box having outer edges in overflow relationship with said dyeing solution box;

a dyeing roll within said dyeing box;

a pair of winding rolls positioned above said dyeing box so that a web of fabric on one of said winding rolls may be unwound from said winding roll to travel downwardly through said dyeing box to pass under said dyeing roll and upwardly to be sound on the other of said winding rolls;

an extruding pipe located above said dyeing roll; and



a dyeing solution circulating system arranged to take dyeing solution from said dyeing solution box and circulate said dyeing solution to said extruding pipe to be extruded downwardly toward said dyeing roll, whereby dyeing solution will fill said dyeing box and be caused to flow along said dyeing roll and said fabric web to said outer edges of said dyeing box and overflow said dyeing box into said dyeing solution box to be recirculated, thereby maintaining a uniform concentration of dye in said dyeing solution circulating through said dyeing box in contact with said fabric.

4,541,256

FLANGE LOCK

John Green, 204 S. Trail Ridge Rd., Edmond, Okla. 73034

Filed Jan. 31, 1983, Ser. No. 462,459
Int. Cl.[4] F16B *41/00*
U.S. Cl. 70—232 **9 Claims**

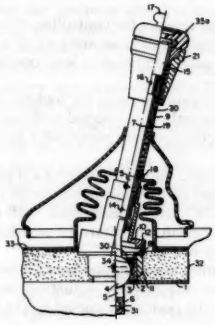
1. A flange lock comprising a pair of shells, hinge means swingably interconnecting the shells at one end thereof, and lock means releasably interconnecting the shells at the other end of the shells, each of said shells having at least one inwardly extending face plate thereon and being of a shape to encompass at least one flange to be protected when swung together and locked, said other ends of said shells having sleeves secured thereto which align with each other in the closed position of the flange lock, a hollow nipple disposed within and extending between said sleeves, and lock means extending through said hollow nipple releasably to retain said nipple in said sleeves against unauthorized removal, said lock means comprising a screw type cam lock operated by a key, said cam lock being releasably received within said nipple, said cam lock and said nipple having coacting non-circular portions to prevent rotation of a portion of said cam lock within said nipple, said cam lock having a rod having screw-threaded engagement with means carried by a said shell, said rod being rotatable relative to said nipple only when said key is inserted in said cam lock thereby to permit engaging and disengaging said rod from said screw-threaded means.

4,541,257

SAFETY LOCK FOR AUTOMOBILES

Rudi Stoll, Karl-Schlageter Strasse 22 a, D-7512 Rheinstetten-FO., Fed. Rep. of Germany

Filed Sep. 26, 1983, Ser. No. 535,595
Int. Cl.[4] E05B *65/12;* **B60R** *25/06*
U.S. Cl. 70—247 **3 Claims**



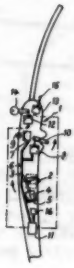
1. A safety lock for an automobile with a manual transmission operable by a floor-mounted shift stick, said shift stick including a double-armed shift lever having an operating ball pivotally supported in a neck member mounted on the floor of the automobile, said safety lock comprising a flanged double tube member having lower and upper tube sections interconnected by an intermediate flange, said lower tube section closely fitting over said neck member for engagement therewith and said upper tube section projecting upwardly from said intermediate flange, a locking sleeve disposed on said shift stick and being axially movable thereon between upper and lower end positions, said sleeve having a locking member disposed at its lower end and adapted and sized to fit into said upper tube section so as to be tightly received therein when said locking sleeve is in its lower end position thereby to prevent operation of said shift stick, and a lock disposed at the upper free end of said shift stick and capable of locking said sleeve in at least one of its upper and lower end positions, said shift stick including an inner tube adapted to be firmly connected to said shift lever, with said locking sleeve being slidably disposed on said inner tube with an annular gap therebetween and a coil spring disposed in said annular gap abutting at one end tubular means connected to said inner tube and at the other end a ring member movable with said locking sleeve for resiliently forcing said locking sleeve toward its upper end position.

4,541,258

LATCH, IN PARTICULAR FOR AN AUTOMOBILE VEHICLE DOOR

Pierre Périou, Cergy, and Jean Dauvergne, Fosses, both of France, assignors to Compagnie Industrielle de Mecanismes, France

Filed Mar. 8, 1982, Ser. No. 355,494
Claims priority, application France, Mar. 10, 1981, 81 04708
Int. Cl.⁴ E05B *51/02*
U.S. Cl. 70—263 **6 Claims**



1. A latch, in particular for an automobile vehicle door, comprising:

inner and outer devices for controlling the unlatching of the latch wherein the devices are part of a closed hydraulic circuit and each comprises at least one unlatching control pump;

a device for locking the latch, the locking device comprising a first directional valve inserted in the circuit between said outer unlatching control pump and a means for unlatching the latch;

a closed hydraulic circuit containing a liquid, said hydraulic circuit further comprising an expansion vessel and a check valve, which valve is associated with the vessel and is adapted to permit the return of said liquid to the vessel only at very low flows;

priority actuating means in combination with the first directional valve, the priority actuating means operative in response to the position occupied by the latching means of the latch;

a second directional valve having a neutral position; and,

means associated with said second valve for returning said second valve elastically to said neutral position, said second directional valve being inserted between said outer device and the first directional valve and mounted in such manner as to be shifted by actuating means for said second directional valve when, and only when, said priority actuating means are in a state corresponding to the unlatched or incompletely latched state of the latch, and to then connect said outer device to a latching end of the first directional valve.

4,541,259

COMBINATION LOCK

Tim M. Uyeda, South San Gabriel, Calif., assignor to La Gard, Inc., Torrance, Calif.

Filed Aug. 3, 1981, Ser. No. 289,452
Int. Cl.⁴ E05B *9/00, 37/08, 41/00*
U.S. Cl. 70—316 **14 Claims**

1. In a lock having a lock housing, a lock mechanism contained in said housing, a bolt for selectively maintaining the door of an enclosure in a closed and locked condition, said lock mechanism permitting said bolt to acquire an unlocked condition permitting said door to open in response to pre-determined manipulations of said lock mechanism, the improvement comprising the provision of mode selection means including:

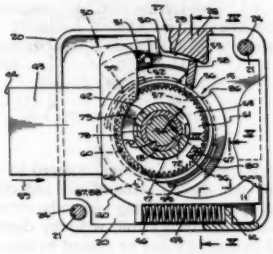
a bi-positional lock cover cooperating with said lock housing to encase said lock mechanism, said lock cover alternatively mountable on said lock housing in one of two orientations; and

structure contained on the interior surface of said lock cover for engaging said lock mechanism and causing its mode of operation to change only when said lock cover is selectively mounted in one of the two orientations.

4. An improved gate ring for use with an inner drive member to form one of multiple tumbler wheels of a combination lock contained within a lock housing, and having a changeable combination, said improved gate ring comprising;

an annular ring;

mounting means integral with said annular ring for rotatably mounting said annular ring about the periphery of and concentric with said inner drive member; and



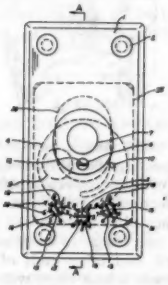
gripping means integral with said annular ring resisting rotation of said annular ring relative to said inner drive member by engaging the periphery of said inner drive member, said gate ring and said inner drive member having a first mode of operation by which said gripping means preserves the rotational orientation of the gate ring relative to the inner drive member; and a second mode of operation by which the resistance of rotation of the gripping means is overcome and said gate ring rotates relative to said inner drive member; wherein said gripping means includes at least one gripping strap portion of said annular ring tensioned between two angularly displaced locations on said gate ring and tangentially contacting the periphery of said inner drive member for resisting relative rotation.

4,541,260

GUARD PLATE AND ALARM

Edward Rubinstein, 3325 Neptune Ave., Brooklyn, N.Y. 11224, and Efim Rubinshtein, 2612 West St., Brooklyn, N.Y. 11223

Continuation-in-part of Ser. No. 147,623, May 7, 1980, Pat. No. 4,365,491. This application Jun. 28, 1982, Ser. No. 393,063
Int. Cl.⁴ E05B *17/14, 37/12*
U.S. Cl. 70—425 **2 Claims**



1. An improved guard plate and alarm for protecting a

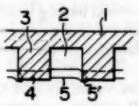
cylinder of a lock, comprising: a body attached to the door in the vicinity of the cylinder, said body having a first opening in alignment with cylinder; a cylinder cover movably mounted on an inside surface of said body between said body and said door, said cylinder cover having an opening approximately equal in size to said first opening of said body; means for moving said cylinder cover positioned on a surface of said cylinder cover and being accessible through a second opening in said body; at least one substantially round finger including a cutoff portion, rounded portions of each finger interacting with a respective groove made on the periphery of said cylinder cover to prevent rotation of said cylinder cover, rotation of each finger causing said rounded portions to move away from respective grooves and causing said cutoff portions to become aligned with said respective hollow grooves, thereby permitting movement of said cylinder cover, and each finger being rotatably inserted in a respective third opening in said plate; at least one stud extending from each finger into and through the door, each stud having an electrical contact on a distal portion; at least one tumbler positioned on an inside surface of said door, each tumbler having an electrical contact positioned for occasional contact with the electrical contact on said distal end of a respective stud; and an electrical circuit including a power means, an alarm means and said electrical contacts, such that the touching of the electrical contact on the distal end of a stud with the electrical contact on a respective tumbler closes said electrical circuit and activates said alarm.

4,541,261

METHOD OF PRODUCING HEAT PIPE

Michio Yanadori, Hachioji, and Toshiaki Kawabata, Tokyo, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 14, 1983, Ser. No. 532,110
Claims priority, application Japan, Sep. 22, 1982, 57-163874
Int. Cl.⁴ B23P *15/26*
U.S. Cl. 72—112 **5 Claims**



1. A method of producing a heat pipe comprised of a closed vessel filled with a liquid adapted for evaporation and condensation in said closed vessel, said closed vessel having an inner surface which is provided with a multiplicity of longitudinal deep grooves which move the liquid by capillary action thereby to convey heat from one to the other end of said closed vessel, said method comprising: drawing a rotating drawing tool through the pipe provided with the deep grooves to form, by plastically working, a plurality of shallow grooves in the top surfaces of ridges separating said deep grooves so as to intersect said deep grooves, and to form a plurality of spaced bridges connecting adjacent ridges by burrs which are produced during the formation of the shallow grooves on the top surfaces of the ridges, thereby to enhance the capillary effect produced by said deep grooves.

4,541,262

PROCESS FOR COLD ROLLING OF TUBES BY MEANS OF A PILGER MILL AND DEVICE FOR USING THE PROCESS

Pierre Peytavin, Neuilly-sur-Seine, France, assignor to Vallourec S.A., Paris, France

Filed Jul. 20, 1983, Ser. No. 515,575
Claims priority, application France, Jul. 21, 1982, 82 13035
Int. Cl.⁴ B21D *7/02*
U.S. Cl. 72—214 **15 Claims**

1. A process for cold rolling of tubes utilizing a Pilger mill, a roll stand and a blank, which comprises:

driving said roll stand with a forward and return cyclical movement;

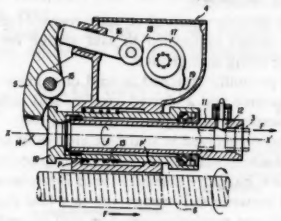
advancing the blank near each of upstream and downstream dead centers thereof; and

rolling said blank during a return pass of said roll stand wherein a rear part of said blank is moved backwards during rolling performed during said return pass of said roll stand.

5. A device for cold rolling of tubes, comprising:

a Pilger mill having a roll stand;

means connected to said roll stand for driving said roll stand under a forward and return cyclical movement, said forward and return cyclical movement having respective upstream and downstream dead centers;



means located on said mill for controlling the advance of a tube blank near the upstream and downstream dead centers, said means for controlling being operatively connected to said means for driving and having cam means whereby said cam means makes one revolution during the forward and return movement of said roll stand; and

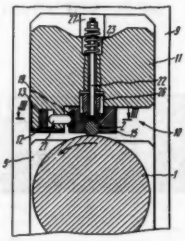
drive means associated with said means for controlling, said cam means having first and second diametrically opposite bosses for acting on said blank through said drive means, said first boss acting on said blank when said roll stand is near the upstream dead center and said second boss acting on said blank when said roll stand is near the downstream dead center.

4,541,263

ROLL MILL STAND

Viktor F. Potapkin; Igor A. Morozov; Vladimir A. Fedorinov, and Alexandr S. Ravich, all of Donetskaya, U.S.S.R., assignors to Kramatorsky Industrialny Institut, Kranatorsky, U.S.S.R.

Filed Apr. 21, 1983, Ser. No. 486,994
Int. Cl.⁴ B21B *37/00*
U.S. Cl. 72—243 **3 Claims**



1. A roll mill comprising:

a housing;

a first pad supported in and movable relative to said housing;

a second pad supported in and movable relative to said housing;

a first bearing mounted in said first pad;

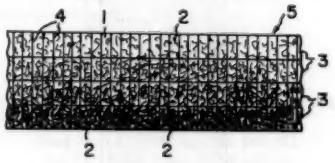
a second bearing mounted in said second pad;
a main roll rotatably mounted in said first and second bearings;
an auxiliary roll adjacent to said main roll with strip being passed between said main roll and said auxiliary roll, the axis of said auxiliary roll lying in a first transverse plane and the axis of said main roll lying in a second transverse plane, said first plane being parallel to said second plane;
a control means to control the profile and shape of the strip as the latter is being passed between said rolls, comprising:
a crosspiece carried on and movable relative to said housing and having a groove provided in one of its surfaces, and having spaced first and second channels extending transversely of and between said groove and a second surface of said crosspiece;
a wedge slidably received in said groove of said crosspiece;
a drive means connected to said wedge for moving said wedge along said groove;
a collet pivotally attached to said crosspiece and having a first groove and a second groove, said collet supporting said auxiliary roll adjacent said main roll;
a first insert received in said first groove of said collet;
a second insert received in said second groove of said collet;
a first cam movably carried in said first channel and interposed between said wedge and said first insert;
a second cam movably carried in said second channel and interposed between said wedge and said second insert;
whereby actuation of said drive means causes said wedge to slide along said groove to simultaneously move each of said cams and pivot said collet and the axis of said auxiliary roll relative to the axis of said main roll.

4,541,264

HEAT RESISTANT PAD FOR USE WITH REAR FACILITIES OF ALUMINUM EXTRUSION PRESSING MACHINE

Shunya Awano, Matsudo; Kazusuke Koseki, Kashiwa, and Masanori Nishida, Narashino, all of Japan, assignors to Ichikawa Woolen Textile Co., Ltd., Tokyo, Japan

Division of Ser. No. 441,110, Nov. 12, 1982,. This application Jan. 15, 1985, Ser. No. 691,533
Claims priority application Japan, Nov. 18, 1981, 56-170711
Int. Cl.⁴ B21C *35/02*
U.S. Cl. 72—257 **3 Claims**



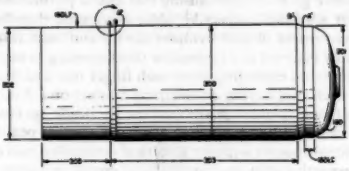
1. In an aluminum extrusion process, the improvement comprising receiving the hot extruded aluminum onto a heat resistant pad comprising a plurality of batt layers, each batt layer consisting essentially of carbon fibers admixed with aromatic polyamide fibers, said batt layers being superimposed one on another and entangled into an integral felt-like structure by needle punching.

4,541,265

PROCESS FOR FORMING A DEEP DRAWN AND IRONED PRESSURE VESSEL HAVING SELECTIVELY CONTROLLED SIDE-WALL THICKNESSES

Richard G. Dye, Warren, and Arthur W. Robichaud, Atlantic Highlands, both of N.J., assignors to Purolator Products Inc., Rahway, N.J.

Continuation of Ser. No. 332,337, Dec. 18, 1981, abandoned, which is a division of Ser. No. 46,157, Jun. 7, 1979, Pat. No. 4,320,848. This application Jul. 17, 1984, Ser. No. 632,251
Int. Cl.⁴ B21D *22/00*
U.S. Cl. 72—349 **7 Claims**



1. A process for forming an improved pressure vessel, comprising the step of:
forming an initially flat piece of virgin metal having a particular thickness into a pressure vessel during a single stroke, ironing and drawing operation using a cylindrical mandrel having a multiple stepped, external side-wall profile with
a first end and a second end;
a first portion adjacent the first end having a first axial length and a first external diameter;
a second portion adjacent the second end having a second axial length and a second external diameter, the second diameter being substantially similar but less than the first diameter; and
a third portion located between the first and second portions, the third portion having a third axial length substantially greater than the first and second axial lengths and a third external diameter greater than the first and second diameters,
wherein the pressure vessel formed has a multiple, stepped, internal side-wall profile corresponding to the multiple, stepped external side-wall profile of the mandrel with
a first closed end and a second open end;
a first portion integrally formed adjacent the first end having a first axial length and a first thickness;
a second portion adjacent the second end having a second axial length and a second thickness, and the second thickness being substantially similar but less than the first thickness; and
a third portion located between the first and second portions, the third portion having a third axial length substantially greater than the first and second lengths and a third thickness less than the first and second thicknesses.

4,541,266

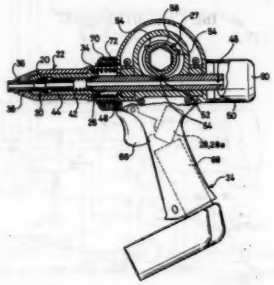
RIVETING MOTOR TOOL

Katsuyuki Totsu, Higashi-Mukojima, Japan, assignor to Hios Inc., Tokyo, Japan

Filed Feb. 14, 1984, Ser. No. 580,549
Claims priority, application Japan, Feb. 21, 1983, 58-27285
Int. Cl.⁴ B21D *31/00*
U.S. Cl. 72—391 **1 Claim**

1. A riveting motor tool for use in fastening a pop rivet in which a fastening shank of the rivet having an enlarged end is inserted into a flanged sleeve body and the fastening shank is grasped to be torn off for forming a splayed portion at a free end of the sleeve, the riveting motor tool comprising a grasping means for the fastening shank, an axially pulling means connected to the grasping means, a rotary drive means engaged with the pulling means, a motor connected to the rotary

driving means through a reduction mechanism, as well as restoring means for returning the grasping means and/or the pulling means to their initial position, said pulling means comprising an axially reciprocable slide shaft having a lug thereon engageable by teeth on said rotary drive means, said teeth being spaced apart from each other a peripheral distance greater than the stroke length of the slide shaft from the position of tearing off the fastening shank by the grasping means to a restored initial position thereby to prevent the subsequent



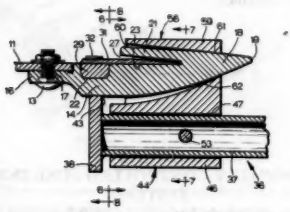
tooth from engaging the lug of the slide shaft, the slide shaft having recesses thereon, on opposite sides of said lug, and means for reversibly actuating said rotary drive means so that said teeth approach said lug through said recesses and contact one or the other side of said lug depending on the direction of rotation of said rotary drive means, whereby upon reverse rotation of said rotary drive means said grasping means release the fastening shank of a rivet when the power of said motor is insufficient for tearing off the fastening shank.

4,541,267

SICKLE GUARD ALIGNING TOOL

John M. Kapphahn, Rte. 1, Elbow Lake, Minn. 56511

Filed Jun. 6, 1983, Ser. No. 501,426
Int. Cl.⁴ B21J *13/08*
U.S. Cl. 72—458 **23 Claims**



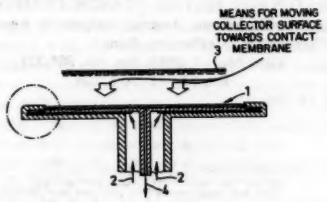
1. A tool for straightening a bent body of a guard of a sickle bar comprising: an elongated handle having an end, a fulcrum member attached to the end of the handle adapted to engage a portion of the guard, and a shroud mounted on the handle adjacent the fulcrum member, said shroud having wall means providing a pocket for accommodating a body of a bent guard, said pocket having a generally tirangular shaped cross section, and said wall means having an inside surface that converges away from the fulcrum member and diverges away from the handle, whereby on movement of the handle the shroud is moved and applies force on the bent body to straighten said bent body, said shroud including sleeve means having a passage accommodating a portion of the handle to allow the shroud to move relative to the handle in the longitudinal direction thereof, said sleeve means having slots in opposite sides thereof extended in the longitudinal direction of the handle, said handle having a hole aligned with said slots, and fastening means extended through said slots and hole securing the sleeve means in an adjusted position on the handle, thereby locating the shroud in a selected position relative to the fulcrum member to accommodate the body of a guard.

4,541,268

METHOD AND DEVICE FOR THE SAMPLING OF TRACE ELEMENTS IN GASES, LIQUIDS, SOLIDS OR IN SURFACE LAYERS

Bernhard Odernheimer, Munster, Fed. Rep. of Germany, assignor to Bruker-Franzen Analytik GmbH, Bremen, Fed. Rep. of Germany

PCT No. PCT/DE82/00189, § 371 Date May 20, 1983, § 102(e) Date May 20, 1983, PCT Pub. No. WO83/01110, PCT Pub. Date Mar. 31, 1983
PCT Filed Sep. 22, 1982, Ser. No. 504,688
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1981, 3137765
Int. Cl.⁴ G01N *13/00*
U.S. Cl. 73—23 **13 Claims**



1. Method of sampling trace components in gases, liquids, solids or in surface layers for the purpose of detection, identification or quantification, the steps of said method including:

exposing a collector surface to a material to be sampled,

applying said collector surface to a heatable contact membrane of a receiving head of an analysis apparatus, and

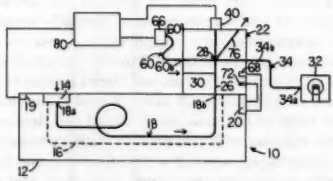
flushing said contact membrane with a carrier gas along the surface thereof which is not in contact with said collector surface for transporting trace components to be analyzed.

4,541,269

GAS CHROMATOGRAPH DETECTOR

Larry C. Thomas, Corvallis, Oreg., assignor to The State of Oregon acting by and through State Board of Higher Education for and on behalf of Oregon State University, Eugene, Oreg.

Filed Jul. 27, 1983, Ser. No. 517,662
Int. Cl.⁴ G01N *31/08*
U.S. Cl. 73—23.1 **5 Claims**



1. A gas chromatographic detector for selective detection of compounds which have photo-responsive properties in a gas-phase, which comprises

a chromatographic column with input and output ends, through which compounds travel while in a gas phase, and an oven encompassing said column useable in estab-

lishing a selected temperature above ambient temperature within said column,

a detection block disposed directly adjacent and externally of said oven having an internal detection chamber, said block being directly connected to the output end of said column,

a light source disposed in spaced-air-insulated relation from the oven, and

first flexible light-transmitting conduit means connecting said light source with said detection chamber in said block.

4,541,270

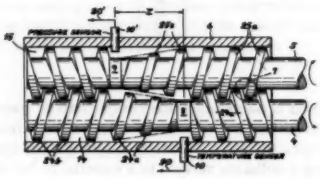
APPARATUS FOR TESTING PLASTIC COMPOSITIONS

Wilhelm Hanslik, Vienna, Austria, assignor to American Maplan Corporation, McPherson, Kans.

Filed Mar. 1, 1984, Ser. No. 585,321

Int. Cl.[4] G01N *11/08*

U.S. Cl. 73—56 **5 Claims**



1. An apparatus for testing the extrudability of platic compositions, comprising:

a housing provided with two mutually parallel and intersecting cylindrical bores and with an inlet for introducing material to be tested into said bores;

a pair of plasticizing screws in said bores provided with drive means for continuously counterrotating same, each of said screws having a first thread section proximal to said inlet and a second thread section remote from said inlet, the first and second thread sections of each screw being separated from each other by an axial gap and being formed from turns of mutually opposite pitch, the gaps of said screws being axially separated from each other by a recirculation zone axially spaced from said inlet, the turns of the first thread sections of said screws being of mutually opposite pitch and intermeshing between said inlet and said recirculation zone, the turns of the second thread sections of said screws being of mutually opposite pitch and intermeshing in a region beyond said recirculation zone, an extension of the first thread section of one screw and an extension of the second thread section of the other screw overlapping each other in said recirculation zone with turns of the same pitch shaped and dimensioned to avoid clashing with one another during counterrotation;

first sensing means coupled with said drive means for continuously monitoring the torque applied to said screw in rotating same;

second sensing means in said recirculation zone for continuously monitoring the pressure of a mass of plastic material transported therein by said overlapping extensions; and

third sensing means in said recirculation zone for continuously monitoring the temperature of the transported mass.

4,541,271

MEASURING ARRANGEMENT FOR CONTINUOUS MONITORING OPERATING PARAMETERS OF AN INTERNAL COMBUSTION ENGINE

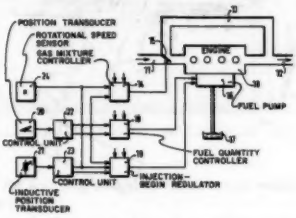
Ulrich Flaig, Markgröningen; Werner Fischer, Ditzingen; Johannes Locher, Stuttgart, and Wolfgang Schmidt, Vaihingen/-Enz, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 15, 1983, Ser. No. 551,720

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1982, 3242317

Int. Cl.[4] G01M *15/00*

U.S. Cl. 73—117.3 **12 Claims**



1. A measuring arrangement for an internal combustion engine for continuously monitoring operating parameters thereof, the measuring arrangement being supplied by a supply voltage subject to fluctuations in the level thereof and comprising:

a sensor for providing a signal indicative of changes in one of the parameters;

a current supply arrangement for controlling and supplying current to said sensor, the current supply arrangement including:

current supply means connected to said sensor and operating in its normal dynamic range; and,

control means for detecting said fluctuations and controlling said current supply means in response thereto to maintain the same in said normal dynamic range whereby an improved signal-to-noise ratio of the output signal at said sensor is obtained.

4,541,272

ELECTRONICALLY CONTROLLED FUEL INJECTION SYSTEM

Roland Bause, Schönnfeldstrasse, D-8300 Landshut, Fed. Rep. of Germany

Filed May 13, 1983, Ser. No. 494,390

Int. Cl.[4] G01M *15/00*

U.S. Cl. 73—118 **17 Claims**

1. Electronically controlled fuel injection system for mixture-compressing, externally ignited internal-combustion engines, the system including:

at least one suction pipe (1) connected via the intake valve path with at least one combustion chamber of the engine;

an electrically controllable injection valve (2) disposed at the suction pipe to supply the fuel;

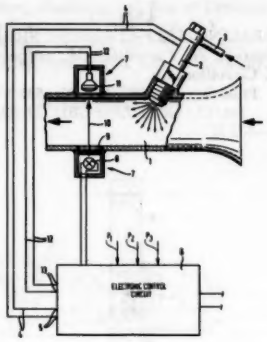
a measuring device effective in the suction pipe (1); and

an electronic control circuit (6) operatively connected at its input with the measuring member and at its output with the injection valve;

characterized in that

the measuring device is an electrooptical spectrometer (7)

which analyzes the fuel-air mixture sucked in by the engine so as to determine the fuel-air ratio of the mixture; and



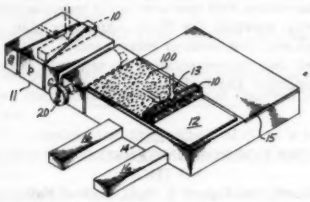
the electrical control circuit (6) is a comparison circuit which compares the mixture-dependent electrical output signals of the spectrometer (7) with a preset desired value.

4,541,273

STRUCTURAL AND SURFACE PROPERTIES TESTER FOR PAPER

Yuri A. Bery, Tukwila, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Nov. 2, 1983, Ser. No. 548,166
Int. Cl.[4] G01B *21/30*
U.S. Cl. 73—150 R **22 Claims**



1. A method of evaluating the internal structure and surface properties of a sheet material which comprises:

securing a sample of the sheet material to a supporting means;

providing a solid marker means having an elongated sample contacting surface adapted to transfer a visible marking to any portion of the sample surface contacted by the means;

conditioning the sample contacting surface of the solid marker means prior to contacting the sample in order to remove any surface-irregularities;

providing a loading means so that the marker means will bear against the sample with a predetermined pressure;

contacting the sample with the marker means;

uniformly advancing the conditioned marker means across the sample while under said pressure so that the marker means contacts and marks a substantial portion of the sample surface; and

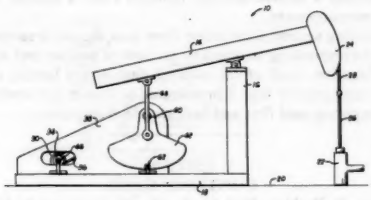
relating the pattern of markings on the sample surface to the property being determined.

4,541,274

APPARATUS AND METHOD FOR MONITORING AND CONTROLLING A PUMP SYSTEM FOR A WELL

John C. Purcupile, Oklahoma City, Okla., assignor to Board of Regents for the University of Oklahoma, Norman, Okla.

Filed May 10, 1984, Ser. No. 608,710
Int. Cl.[4] E21B *47/00*
U.S. Cl. 73—151 **14 Claims**



9. A method for monitoring the operation of a pumping system having a polish rod that is reciprocated by an electric motor to pump a well, the motor having an output shaft mechanically coupled to said polish rod to move the polish rod through one reciprocation for a plurality of revolutions of the motor output shaft, comprising the steps of:

electronically counting the revolutions of the motor output shaft for each reciprocation of the polish rod;

electronically measuring the time required for each revolution of the motor output shaft;

electronically determining a dynamic load on the polish rod for each counted revolution of the motor output shaft from the time required for such revolution; and

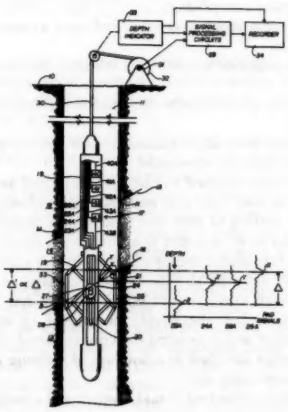
simultaneously providing a visual indication of the motor output shaft revolution count and dynamic load corresponding to each such motor shaft revolution count for each reciprocation of the polish rod.

4,541,275

LOG CORRELATION METHOD AND APPARATUS

Mark G. Kerzner, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Sep. 19, 1983, Ser. No. 533,178
Int. Cl.[4] E21B *47/00*
U.S. Cl. 73—152 **20 Claims**



1. A method for depth correlating a plurality of well logging

measurements each comprised of data taken at a plurality of depths within at least one borehole, said method comprising the steps of:

deriving a first activity function from a first of said measurements;

selecting first data points from said first measurement corresponding in depth to maxima of said first activity function, each of said first data points having magnitudes greater than a preselected first noise level;

deriving a second activity function from a second of said measurements;

selecting second data points from said second measurement corresponding in depth to maxima of said second activity function, each of said second data points having magnitudes greater than a preselected second noise level; and

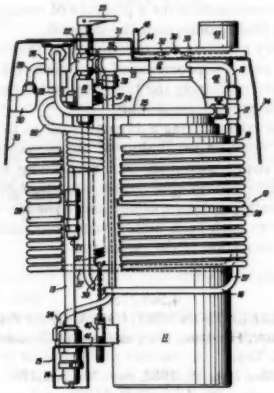
comparing said first and said second data points.

4,541,276

CONTENTS GAGE

Warren E. Perkins, Port St. Lucie, Fla., assignor to $CRYO_2$ Corporation, Fort Pierce, Fla.

Filed Aug. 2, 1983, Ser. No. 519,597
Int. Cl.[4] G01K *23/20*
U.S. Cl. 73—296 **26 Claims**



1. A portable, liquid oxygen therapy unit including contents gauging means comprising:

flask means adapted to contain and store a quantity of liquid oxygen;

means to vaporize and deliver a metered stream of oxygen to a user;

a mounting plate fixedly attached to the top of said flask means;

a lever arm pivotally attached to said plate at a pivot point intermediate the arm ends;

spring means attached to one lever arm end and extending between said lever arm end and an attachment point in a lower portion of said unit, said spring means adapted to bias said lever arm end in a downward direction;

pressure transducer means disposed at the other lever arm end and adapted to indicate an increased pressure upon downward movement of said other arm end;

indicating means operatively connected to said pressure transducer and calibrated to show the level of liquid oxygen within said flask as a function of pressure indicated by said transducer, and

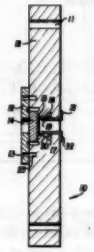
handle means attached to said lever arm at a point intermediate the spring-attached lever arm end and the pivot point of said lever arm whereby lifting said therapy unit by said handle means causes said indicating means to provide a visual readout of the level of liquid oxygen contained within said flask.

4,541,277

SELF-SEALING, SELF-CLEANING SIGHT GLASS

R. Emory Starnes, Jr., Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.

Filed Sep. 23, 1983, Ser. No. 535,171
Int. Cl.[4] G02B *7/00*; G01F *23/02*
U.S. Cl. 73—432 R **15 Claims**



1. A self-sealing, self-cleaning sight glass assembly for permitting visual access to a closed chamber, comprising:

a. a first apertured member means for mounting to a flange on the chamber,

b. an elongated viewing glass means for covering said aperture,

c. sealing means for releasably sealing said viewing glass means and said first member means, positioned between said viewing glass means and said first member means,

d. a second member means for releasably securing said viewing glass means to said first member means,

e. in said first member at least two exhaust apertures extending along an elongated portion of the viewing glass means for facilitating the passage of a fluid or gas transversely across at least a portion of the inside surface of the viewing glass means, said apertures being opposite one another,

f. an entry aperture for fluid, vapor, or gas extending through said first member means, and

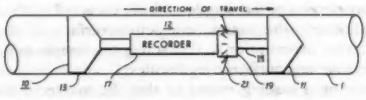
g. at least one communicating passageway between said entry aperture and said exhaust apertures.

4,541,278

PIPELINE CORROSION SENSING DEVICE AND METHOD

Glenn A. Marsh, and Robert F. Buhl, both of Fullerton, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Apr. 23, 1984, Ser. No. 602,970
Int. Cl.[4] G01N *29/04*; G01B *5/28*
U.S. Cl. 73—592 **11 Claims**

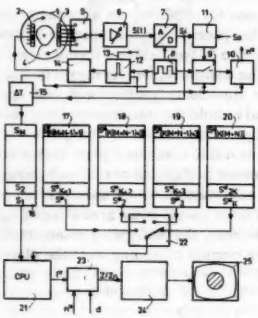


1. A device to determine conditions in or on the interior walls of a pipeline arising from corrosion, pitting, gouges, scratches, deposits, and dents which comprises a pipeline pig suitably arranged with radial, spring-loaded fingers adapted to contact the interior walls of a pipeline, said sensing fingers being acoustically connected to a microphone and said microphone being electrically connected to a recording device.

4,541,279
METHOD OF DETERMINING THE TIME-OF-FLIGHT OF AN ULTRASONIC PULSE

Hermann Schomberg, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 14, 1983, Ser. No. 551,613
Claims priority, application Fed. Rep. of Germany, Nov. 16, 1982, 3242284
Int. Cl.[4] G01N *29/00*
U.S. Cl. 73—597 7 Claims



1. In a method for determining the time-of-flight of an ultrasound pulse through an examination zone which is disposed between an ultrasound transmitter and an ultrasound receiver which comprises the steps of:

transmitting an ultrasound pulse through the examination zone;

receiving the pulse after it has traveled through the examination zone and producing an electrical received signal (s) therefrom;

periodically sampling the received signal (s) at a predetermined rate 1/T and storing the sequences of samples thus produced;

measuring the discrete period of time (N*T) between the time of transmission and the time that the sampled received signal reaches a predetermined threshold value;

calculating a correction factor by: comparing the stored sequence of samples of the received signal with sequences of periodic samples of a discrete reference signal (s*), repeatedly shifting the samples of the reference signal by one sample position and again comparing the received signal sequence to the shifted reference signal until a shifted position of the reference signal which produces a best correspondence between the samples of the received signal and the samples of the shifted reference signal is determined, and then choosing the associated shift of the reference signal as the correction factor;

and adding the correction factor to the interval (n*T) to determine the time-of-flight;

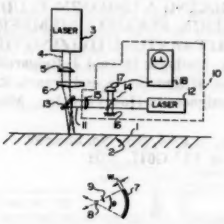
wherein, as an improvement:

the reference signal (s*) has a sampling density which is a factor K larger than sampling of the stored signal (s), and wherein the stored signal is compared with sequences which consist of every K^{th} sample of the reference signal.

4,541,280
EFFICIENT LASER GENERATION OF SURFACE ACOUSTIC WAVES

Paolo G. Cielo, Montreal, and Jean Bussière, St-Bruno, both of Canada, assignors to Canadian Patents & Development Ltd., Ottawa, Canada

Filed Dec. 28, 1982, Ser. No. 454,094
Int. Cl.[4] G01N *29/04*
U.S. Cl. 73—603 12 Claims



1. A method of generating surface acoustic waves on a surface comprising:

providing a laser generated optical beam;

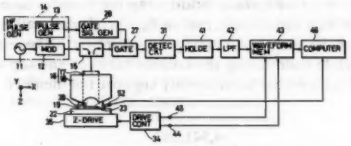
directing the beam to the surface;

and focusing the beam into an annulus irradiated pattern on the surface to form a converging surface wave.

4,541,281
ULTRASONIC MICROSCOPE SYSTEM

Noriyoshi Chubachi, 4-6-203, Katahira 1-chome, Sendai-shi, Miyagi, and Junichi Kushibiki, 48, Aza-Nakazaike, Arai, Sendai-shi, Miyagi, both of Japan

Filed Apr. 2, 1984, Ser. No. 595,865
Claims priority, application Japan, Apr. 3, 1983, 58-58368; May 11, 1983, 58-83428; Oct. 25, 1983, 58-200678
Int. Cl.[4] G01N *29/04*
U.S. Cl. 73—606 31 Claims



1. An ultrasonic microscope apparatus comprising:

a high-frequency pulse generator for generating high-frequency pulses obtained by pulse-modulating a carrier of an ultrasonic frequency;

a duplexer connected to the high-frequency pulse generator, for separating a transmission signal and a reception signal;

an ultrasonic transmitter-receiver connected to the duplexer and supplied with the high-frequency pulse, for radiating an ultrasonic wave of the ultrasonic frequency as a focused ultrasonic beam and receiving a reflected wave;

a sample holder for holding a sample for exposure to irradiation by the focused ultrasonic beam from the ultrasonic transmitter-receiver via an acoustic field medium;

Z-axis direction moving means for moving the sample holder and the ultrasonic transmitter-receiver relative to each other along the axis of the ultrasonic beam;

a detector circuit connected to the duplexer, for receiving an electric signal of the reflected wave from the sample received by the ultrasonic transmitter-receiver and amplifying and rectifying the electric signal to provide an electric reflection signal of a level corresponding to the level of the reflected wave; and

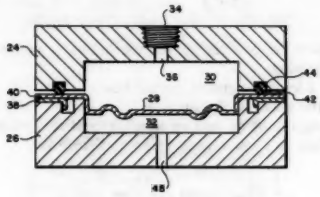
waveform analyzing means connected to the detecting circuit, for inputting the output reflection signal therefrom upon each occurrence of the relative movement for a fixed distance and analyzing an envelope waveform of a series of input reflection signals by a spectral analysis to obtain the dip interval of interference of a leaky elastic wave and a directly reflected wave from the sample.

4,541,282

METHOD OF PRODUCING A UNIFORM FLUID-TIGHT SEAL BETWEEN A THIN, FLEXIBLE MEMBER AND A SUPPORT AND AN APPARATUS UTILIZING THE SAME

Ferdinand J. Auerweck, Hatboro; Donald J. Bulgarelli, Havertown; Curtis A. Roller, Willow Grove, and Francis R. Varrese, Ambler, all of Pa., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 6, 1984, Ser. No. 586,599
Int. Cl.[4] G01L *7/08*
U.S. Cl. 73—715 **8 Claims**



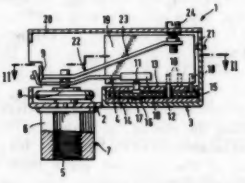
1. A method of producing a fluid-tight seal between a thin, flexible member and a member support including the steps of providing a moat for receiving excess braze material on an external surface of the member support and a dam adjacent to the moat to confine the excess braze material to the moat and having a height above the bottom of the moat to extend the dam past the external surface of the member support to accommodate the thickness of the braze material on the external surface of the member support used for a brazing of the member to the external surface, positioning the member to extend across the dam and the external surface while contacting only the top of the dam and brazing the member to the external surface while maintaining the contact between the top of the dam and the member to uniformly support the member.

4,541,283

PRESSURE SENSOR

Wolfgang Stuhlmann, Wuppertal, Fed. Rep. of Germany, assignor to Westinghouse FANAL-Schaltgeraete GmbH, Fed. Rep. of Germany

Filed Jul. 19, 1984, Ser. No. 632,318
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1984, 3406942
Int. Cl.[4] G01L *9/12*
U.S. Cl. 73—724 **14 Claims**



1. Pressure sensor means for monitoring a pressure of an aggressive media, the pressure sensor means comprising:

at least one pressure transducer means including a movable deflection member;

mechanical-electric transducer means including a plate condenser means having a movable condenser plate clamped at one edge thereof, a power introducing point provided on the movable condenser plate at a position spaced from the clamped edge, said plate condenser means is disposed laterally adjacent the pressure transducer means with the movable condenser plate being disposed substantially perpendicular to a direction of movement of the deflection member;

transmission lever means interposed between said pressure transducer means and said mechanical electric transducer means, said transmission lever means being mounted at only one end thereof;

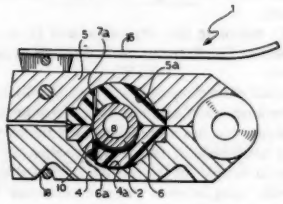
leaf spring means for enabling an adjustment of a precise response of the pressure sensor means in a pressure range of between 0.8 to 50 bar, said leaf spring means is disposed on a side of the transmission lever means facing away from the pressure transducer means, said leaf spring means being adapted to hold the transmission lever means against the deflection member and on the power introduction point of the movable condenser plate means whereby the leaf spring means is clamped at one end thereof at a support of the transmission lever means so as to load the transmission lever means in an area directly opposite the deflection member, the leaf spring means includes a free adjustable leg portion extending over the plate condenser means.

4,541,284

DEVICE FOR MONITORING THE PRESSURE OF FLUID IN A DUCT

Renato Guagliumi, Turin, and Giampiero Perga, Leini, both of Italy, assignors to Marelli Autronica S.p.A., Pavia, Italy

Filed Mar. 23, 1984, Ser. No. 592,970
Claims priority, application Italy, Mar. 23, 1983, 53101/83[U]
Int. Cl.[4] G01L *9/08*
U.S. Cl. 73—730 **1 Claim**

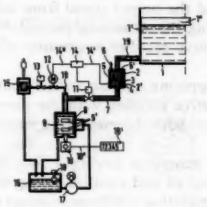


1. A device for monitoring the pressure of fluid in an electrically conductive duct comprising at least one electrical pressure transducer connectable mechanically and electrically to the outer surface of said duct, resilient, non-electrically conductive support means for keeping said at least one transducer in operative electrical connection with said duct, rigid, electrically conductive metal casing means formed in two parts hinged together surrounding and protecting said support means and said at least one transducer for clamping said at least one transducer to said duct by means of said support means and electrically conductive blade means contacting said transducer and said casing means whereby output signals are transmitted from said transducer to said casing.

4,541,285
METHOD AND APPARATUS FOR MEASURING THE PRESSURE OF A LIQUID

Hans W. Hüfner, Aichach, Fed. Rep. of Germany, assignor to Pfister GmbH, Fed. Rep. of Germany

Filed Jan. 23, 1984, Ser. No. 573,028
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1983, 3302175
Int. Cl.[4] G01F 23/18
U.S. Cl. 73—744 11 Claims



7. An apparatus for measuring the pressure of a liquid in a closed tank comprising in combination:

a measuring piston guided in a cylinder and having one surface acted upon by pressure dependent on the pressure to be measured;

a load measuring device connected to the piston;

means providing lubrication by a separating fluid under pressure to said piston whereby the piston is guided in the cylinder in a substantially frictionless manner;

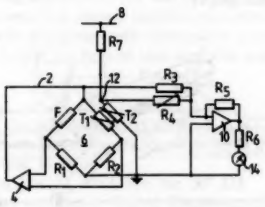
a pressure-tight container enclosing the piston and cylinder with an opposed surface of the piston exposed to the pressure in the container;

and a pressure transmitting means for transmitting to the interior of said container a pressure dependent on the gas and/or vapor pressure in a tank above liquid in said tank.

4,541,286
GAS PRESSURE MEASURING CIRCUIT

Alan E. Holme, 1 Hilary Close, Polegate, East Sussex, England

Filed Aug. 24, 1982, Ser. No. 411,063
Claims priority, application United Kingdom, Aug. 28, 1981, 8126395
Int. Cl.[4] G01L 21/12
U.S. Cl. 73—755 8 Claims



1. A circuit for operating a Pirani gauge comprising,

an electrical bridge which has one arm adapted to receive the gauge and which is arranged to produce an electrical output signal representative of gas pressure within the gauge,

a temperature-sensitive resistive device in an arm of the bridge for providing temperature compensation of the output of the bridge,

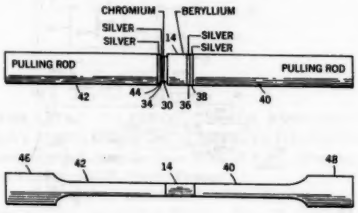
temperature sensing electrical means not embodied within an arm of the bridge and effective to produce an electrical signal indicative of the ambient temperature in which the gauge operates, and

signal translation means electrically connected to and responsive to the output of the bridge and to the signal from the electrical means and capable of producing a gas pressure signal compensated for ambient temperature changes.

4,541,287
METHOD OF MEASURING METAL COATING ADHESION

John R. Roper, Northglenn, Colo., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 28, 1983, Ser. No. 479,761
Int. Cl.[4] G01N 3/08
U.S. Cl. 73—827 8 Claims



1. A method for measuring metal coating adhesion to a substrate material comprising the steps of:

(a) preparing a test coupon of substrate material having the metal coating applied to one surface thereof by a first coating process;

(b) coating said one surface of the coupon and the opposite surface thereof with a second metal by way of a second coating process to provide an adhesion strength greater than that of the coating adhesion to be measured;

(c) coating one end of each of two pulling rods with said second metal by way of said second coating process;

(d) joining the coated end of one pulling rod with the coated end of said one surface of the coupon and the coated end of the other pulling with the coated opposite surface of the coupon by a solid state bonding process; and

(e) applying instrumented static tensile loading to the pulling rods until fracture of the metal coating adhesion to the substrate material occurs.

4,541,288
OPERATING CIRCUIT FOR MAGNETOELASTIC FORCE/PRESSURE SENSORS

William P. Kornrumpf, Albany, and Robert P. Alley, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 27, 1983, Ser. No. 546,228
Int. Cl.[4] G01L 1/12
U.S. Cl. 73—862.69 33 Claims

1. An operating circuit for providing an output having a characteristic changing responsive to the magnitude of a force incident upon a magnetoelastic sensor having at least one coil means wound about a magnetoelastic core with a magnetic flux density saturation magnitude changing responsive to the magnitude of said force, comprising:

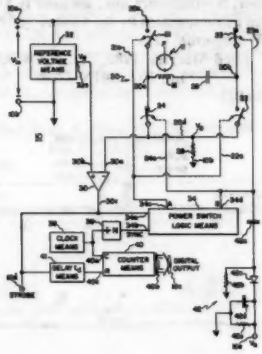
first means operating upon said at least one coil means for varying the magnetizing force in said core to cause the core flux density to attain substantially the saturation magnitude thereof in either selected one of a pair of opposite polarity saturation regions;

second means for providing a signal upon detection of a change in the current flowing through said at least one coil means responsive to said core flux density entering

one of said saturation regions; said operating circuit output characteristic being the frequency at which the second means signal occurs;

third means, responsive to each occurrence of said second means signal, for causing said first means to reverse the direction of the magnetizing force in said core to vary said core flux density to the saturation region of the other polarity; and

fourth means for varying said operating circuit output characteristic responsive to the number of core magnetizing



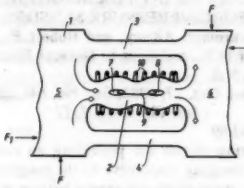
force reversals in a selected time interval and therefore responsive to said incident force magnitude, and comprising: clock means for generating a periodic signal waveform; counter means for counting the number of clock means waveforms occurring between a pair of selected consecutive second means signals; and means for resetting said counting means after the occurrence of a selected number of second means signals, to facilitate providing a next count related to the incident force upon said sensor in the interval between the resettings of said counting means.

4,541,289

TEMPERATURE-COMPENSATED MAGNETOELASTIC FORCE MEASURING MEANS

Stefan Valdemarsson, VästerÅs, Sweden, assignor to ASEA Aktiebolag, Vasteras, Sweden

Filed Mar. 21, 1983, Ser. No. 477,370
Claims priority, application Sweden, Mar. 24, 1982, 8201869
Int. Cl.[4] G01L 1/12
U.S. Cl. 73—862.69 **5 Claims**



1. A magnetoelastic force measuring device operating during successive, measuring and calibrating periods and with temperature-compensated sensitivity, comprising:

a measuring transducer having a core with a measuring portion, an excitation winding adapted to be supplied with an alternating power supply, and a measuring winding;

a reference transducer having a core of the same material as said measuring transducer and a measuring portion with an excitation winding and a measuring winding, said reference transducer measuring portion having substantially the same planar shape and dimensions as said measuring transducer;

said reference transducer being mounted in thermal contact with said measuring transducer, the excitation windings of said measuring and reference transducers providing the measuring portions of both transducers with the same excitation;

spring means for loading said reference transducer measuring portion with a constant force;

an amplifier supplied alternatively with the output signal from said reference transducer during the calibration periods and the output signal from said measuring transducer during the measuring periods;

a phase-sensitive rectifier responsive to the output of said amplifier;

means for supplying a phase-shifted control voltage to said phase-sensitive rectifier with the same frequency as the excitation of both the measuring and reference transducers;

a difference generator having a first input receiving the output signal of said rectifier during the calibration periods and generating a difference signal output, and including a second input;

a reference voltage source supplying a reference voltage to said second input;

an integrator for integratiang said difference signal output, the integrated difference signal controlling said phase-sensitive rectifier to equalize the output thereof with said reference voltage, said integrator having a long discharging time compared to a measuring period so that the phase position of the control voltage, obtained during one calibrating period, is maintained for the next measuring period; and

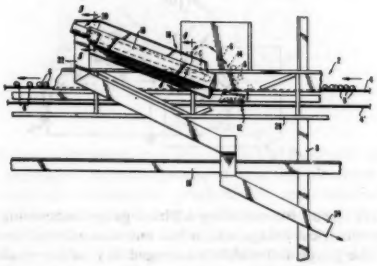
switching means for connecting, during the calibrating periods, an output signal of said reference transducer to said amplifier, and simultaneously connecting the rectifier output to said first input, and connecting, during the measuring periods, an output signal of said measuring transducer to said amplifier, and simultaneously connecting said rectifier output to a digital voltmeter for indicating the temperature-compensated value of the force acting on said measuring transducer.

4,541,290

APPARATUS FOR OBTAINING A RANDOM SAMPLE

Gary O. Niemann, 3204 E. Lake Hartridge Dr., NW., Winter Haven, Fla. 33880

Filed Mar. 28, 1984, Ser. No. 594,379
Int. Cl.[4] G01N 1/10, 1/00
U.S. Cl. 73—863.91 **19 Claims**



1. Apparatus for providing a random sample from a group of objects comprising conveyor means for transporting said group of objects along a first path, striking means for striking said conveyor at intervals programmed means to cause a first random sample of said objects to assume a second path displaced from said first path, and receiving means for intercept-

ing said first sample of said objects thereby separating said first sample from said group.

4,541,291

AUTOMATIC SAMPLING ARRANGEMENT

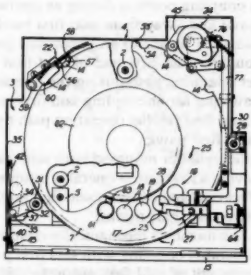
John E. Churchill, Haslingfeld, and Trevor J. Stockdale, Cambridge, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 5, 1983, Ser. No. 520,878

Claims priority, application United Kingdom, Aug. 20, 1982, 8223964

Int. Cl.⁴ G01N *35/04, 35/06*

U.S. Cl. 73—864.25 **9 Claims**



1. An automatic sampling arrangement for supplying liquid samples to an analytical instrument comprising

turntable means for carrying a plurality of removable sample containers, said sample containers being arranged in two circles of differing radii centered on an axis of rotation of said turntable means, said turntable means having a circumference provided with cut-outs,

sampling means for aspirating a sample from one of said sample containers by a sampling tube, said turntable means being indexed to bring said one of said sample containers into registration with said sampling tube, and

movable driving means for driving said turntable means upon engagement with said cut-outs, said driving means adopting one of two positions at said different radii depending upon engagement with said cut-outs,

said sampling means being coupled to said driving means for adopting one of two further positions in synchronism with said two positions of said driving means, said two further positions being respectively on said two circles,

wherein said sampling means radially alternates between said two circle to register with all locations of said sample containers during one turn of said turntable means.

4,541,292

SAMPLING DEVICE

William Clay, Sheffield, England, assignor to Land Pyrometers Limited, Sheffield, England

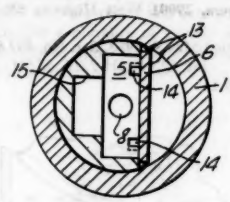
Filed Jun. 22, 1983, Ser. No. 507,121

Claims priority, application United Kingdom, Jul. 7, 1982, 8219719; Feb. 9, 1983, 8303557

Int. Cl.⁴ G01N *1/12*

U.S. Cl. 73—864.55 **18 Claims**

1. A metal melt sampling device comprising a sampling unit of refractory material for mounting in a support tube, said sampling unit including first and second portions and further means, said second portion being integral with said first portion and defining with said further means walls of a main sample cavity, said first portion defining a leading end of the unit; and an inlet passage to enable metal melt to pass in use from said leading end of said unit to said main sample cavity, wherein at least one of said first and second portions is adapted to be a push fit in said support tube and wherein said sampling unit defines an exposed surface adapted to initially contact



metal melt, a portion of said inlet passage and said exposed surface being coated with refractory cement.

4,541,293

LOAD-BEARING TELESCOPIC SLIDE ASSEMBLY AND X-RAY INSTALLATION EQUIPPED THEREWITH

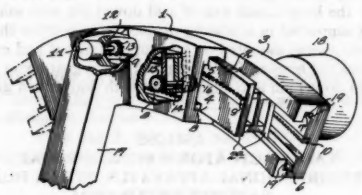
Jean Caugant, and Jacques Dale, both of Paris, France, assignors to Thomson CSF, Paris, France

Filed Jun. 23, 1982, Ser. No. 391,436

Claims priority, application France, Jun. 23, 1981, 81 12297; Mar. 12, 1982, 82 04213

Int. Cl.⁴ F16H *19/04*

U.S. Cl. 74—89.18 **3 Claims**



1. A load-bearing slide assembly for an X-ray installation comprising:

a fixed first support having the general shape of a circular ring sector with a substantially C-shaped cross-section, said cross-section opening laterally and having grooves forming slide tracks;

a mobile second support for carrying said load in either direction with respect to said first support having the general shape of a circular ring sector with a substantially C-shaped cross-section and having grooves forming slide tracks, said cross-section having a lateral opening facing the opening of said fixed support;

a median carriage having the shape of a circular ring sector and an H-shaped cross-section cooperating with said supports with respective parallel ribs engaging the slide tracks of said first and second supports;

means for displacing said carriage with respect to said first support including a first arc-shaped rack-bar, a shaft having a pinion at one end engaging said first rack-bar and a motor for rotating said shaft; and

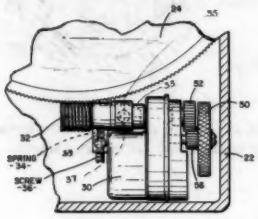
means for displacing said second support with respect to said carriage including a second arc-shaped rack-bar mounted to said first support, a third arc-shaped rack-bar mounted to said second support, and a freely rotatable shaft mounted for movement with said carriage and having a pinion at each end respectively engaging said second and third rack-bars.

4,541,294

DRIVE ASSEMBLY FOR AN ASTRONOMICAL TELESCOPE

Edward R. Byers, 29001 West Highway 58, Barstow, Calif. 92311

Filed May 9, 1983, Ser. No. 492,647
Int. Cl.[4] F16H *1/16, 55/24*
U.S. Cl. 74—89.14 **5 Claims**



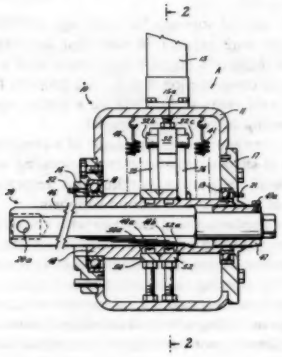
1. The combination of a drive base for rotating an astronomical telescope about its polar axis and including a driven gear mounted on the base coaxially with the polar axis; a support means mounted on one side of said base adjacent to said driven gear; a drive motor having a drive shaft; a bearing housing; a worm gear having a shaft rotatably mounted in said bearing housing in coaxial relationship with said drive shaft of said drive motor and coupled to said drive shaft to be driven thereby; a dowel pin mounted in said support means and engaging said bearing housing to support said motor and worm gear to permit angular movement of said motor and worm gear about the longitudinal axis of said dowel pin with said motor being supported in a floating manner by said drive shaft; and resilient means mounted on said support means and engaging said bearing housing for biasing said worm gear about the axis of said dowel pin into engagement with said driven gear.

4,541,295

VALVE ACTUATOR HAVING A ROTARY BI-DIRECTIONAL APPARATUS WITH A DUAL RATCHET MECHANISM

Harry R. Cove, Carson, Calif., assignor to Hydril Company, Los Angeles, Calif.

Continuation of Ser. No. 217,857, Dec. 18, 1980, abandoned.
This application Dec. 7, 1983, Ser. No. 558,714
Int. Cl.[4] F16H *27/02;* F16K *31/52*
U.S. Cl. 74—142 **3 Claims**



1. A bi-directional valve actuator with a ratchet mechanism adapted for use in combination with a control valve which includes a rotatable stem which, when turned, adjusts the flow through the control valve, said bi-directional valve actuator comprising:

a frame adapted for mounting with a control valve adjacent the rotatable stem thereof;

a shaft means rotatably mounted with said frame, said shaft means mechanically coupled to the stem of the control valve for effecting rotation of the stem in response to rotation of said shaft;

said shaft means having a first ratchet operating path and a second ratchet operating path spaced from said first operating path;

a first pawl having a first end and a second end, said first pawl mounted for longitudinal reciprocating movement toward said first ratchet operating path on said shaft means to a coupling position during an operating stroke of said first pawl and away from said first ratchet operating path on said shaft means to an uncoupled position;

means for coupling said first end of said first pawl to said first ratchet operating path during the operating stroke of said first pawl and for uncoupling said first end of said first pawl from said first ratchet operating path during a return stroke of said first pawl;

a first hydraulic cylinder mounted with said frame, said first cylinder having a first piston operably coupled to said first pawl to effect engagement with said first ratchet operating path to rotate said shaft means;

a first pair of link members mechanically coupled to said first piston for operably coupling with said first pawl for transmitting movement of said first piston to said first pawl;

a first pair of springs each of which is mechanically coupled at one end to said frame at the other end and to one of first pair of link members;

a second pawl having a first end and a second end, said second pawl mounted for longitudinal reciprocating movement toward said second ratchet operating path on said shaft means to a coupling position during an operating stroke of said second pawl and away from said second ratchet operating path on said shaft means to a disengaged position;

means for coupling said first end of said second pawl to said second ratchet operating path during an operating stroke of said second pawl and for uncoupling said first end of said second pawl from said second ratchet operating path during a return stroke of said second pawl;

a second hydraulic cylinder mounted with said frame, said second cylinder having a second piston operably coupled to said second pawl to effect engagement with said second ratchet operating path to rotate said shaft means;

a second pair of link members mechanically coupled to said second piston for operably coupling with said second pawl for transmitting movement of said second piston to said second pawl;

a second pair of springs each of which is mechanically coupled at one end to said frame and at the other end to one of said second pair of link members;

said means for coupling said first pawl and said second pawl each having an urging means for reciprocably moving said first end of each of said pawls into coupling engagement with said associated ratchet operating path, said first pair of springs operating said first pawl for overcoming said urging means associated with said first pawl for reciprocably moving and normally maintaining said first pawl spaced from said first ratchet operating path, said second pair of springs operating said second pawl for overcoming said urging means associated with said second pawl for reciprocably moving and normally maintaining said second pawl spaced from said second ratchet operating path;

said means for urging said first pawl and second pawl into coupling engagement with said shaft means are independent of said operating cylinder to avoid binding of said pawls and said operating paths upon coupling during the power stroke of each of said pawls; and

said means for coupling said first pawl and said second pawl

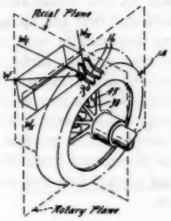
each having an associated retainer member for reciprocably moving said first end of each of said pawls from coupling engagement with said associated ratchet operating path in the absence of the operating stroke of said pawls to protect said pawls from inadvertent movement of said shaft means.

4,541,296

SHOCK ABSORBING MOTOR GEAR

Harry H. Oyafuso, Southfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 18, 1983, Ser. No. 514,759
Int. Cl.⁴ F16H *55/14, 55/17*
U.S. Cl. 74—425 **3 Claims**



1. A gear wheel for engaging a worm gear having a plurality of gear teeth, each gear tooth having a face with substantially constant diameter portion extending axially along said gear wheel and having a curved portion with increasing diameter with increasing axial displacement along said gear wheel;

said gear wheel including flexible support means providing for flexing of said gear wheel to increase the contact area adjacent said curved portion, between each gear tooth and said worm gear, so as to counter the tendency, under load, of said gear teeth to disengage from said worm gear;

said gear wheel further including a first flat portion along said face at a first end of said curved portion and a second flat portion along said face at a second end of said curved portion, the diameter of said first flat portion being greater than the diameter of said second flat portion, and said first end of said curved portion having a diameter equal to said first flat portion and said second end of said curved portion having a diameter equal to said second flat portion; and

said flexible support means including circumferentially spaced flexing spokes extending generally radially so as to couple the center of said gear wheel and the perimeter of said gear wheel and further comprising stop means intermediate adjacent spokes to limit flexing of said spokes.

4,541,297

ROTATING SHAFT OF ROLLER SCREW STRUCTURE AND ITS DRIVEN DEVICE

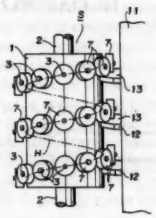
Kazuo Fujita, No. 1, Tohkadai, 1-Chome, Seto City, Aichi Prefecture, Japan

Filed May 26, 1983, Ser. No. 498,503
Claims priority, application Japan, Jun. 12, 1982, 57-101124
Int. Cl.⁴ F16H *55/02, 55/14*
U.S. Cl. 74—424.6 **11 Claims**

1. A drive transmitting apparatus comprising:

(a) a roller screw member including a rotatable central shaft, a plurality of support shafts projecting radially outwardly from said central shaft, said support shafts being arranged at equally spaced intervals along a helical line around said central shaft, a plurality of rollers rotatably mounted on said support shafts, said rollers including bearing means for mounting said rollers on said support shafts, and annular elastic means arranged around at least one end of said support shafts for correcting any error in the positioning of the axes of said shafts and respective rollers relative to said central shaft; and

(b) a rail member arranged adjacent said roller screw member and parallel with the axis of said central shaft, said rail member including a plurality of equally spaced projections having inclined upper surfaces adapted for engagement with the surfaces of said rollers, the inclination of



said projection surfaces being equal to that of the helical line of support shafts on said roller screw member;

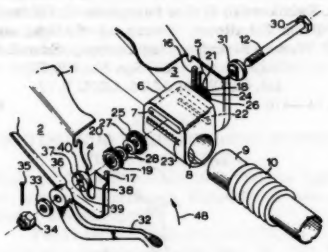
(c) one of said roller screw and rail members being adapted for axial movement and the other of said roller screw and rail members being fixed against axial movement, whereby when said central shaft is rotated, said roller surfaces roatatably engage said projection surfaces and said movable member is moved in the axial direction.

4,541,298

ADJUSTABLE STEERING COLUMN MOUNTING

Derek W. Strutt, Chelmsford, United Kingdom, assignor to Ford Motor Company, Dearborn, Mich.

Filed Jan. 5, 1983, Ser. No. 455,702
Claims priority, application United Kingdom, Jan. 15, 1982, 8201070
Int. Cl.⁴ B62D *1/18*
U.S. Cl. 74—493 **7 Claims**



1. A mounting for an adjustable steering column comprising a support for rotatably carrying a column member, a bracket carrying the support, the support being movable relative to the bracket in two mutually perpendicular directions, and clamping means for clamping the bracket to the support, characterized in that two rack and pinion sets are connected between the bracket and the support such that movement of the support relative to the bracket in each of the mutually perpendicular directions causes the pinions to roll relative to racks of respective rack and pinion sets with frictional forces opposing the relative movement of the racks and pinions and in that the clamping means increases the frictional forces opposing the relative movement of the racks and pinions.

4,541,299
STEERING SHAFT ASSEMBLY FOR AUTOMOTIVE VEHICLES

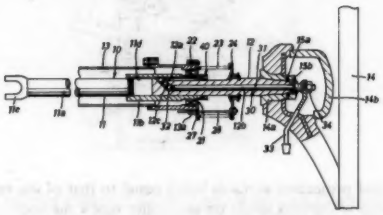
Takakuni Kanaya; Isao Kudo, and Seiji Yokota, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Mar. 6, 1984, Ser. No. 586,821

Claims priority, application Japan, Mar. 14, 1983, 58-36722[U]

Int. Cl.⁴ B62D *1/18*

U.S. Cl. 74—493 **6 Claims**



1. A steering shaft assembly for automotive vehicles, comprising: an upper shaft mounted thereon with a steering wheel, a lower shaft rotatably supported in place within a column tube and telescopically connected to said upper shaft in such a manner as to permit axial adjustment of said upper shaft, and a lock mechanism for releasably fastening said upper shaft to said lower shaft in its adjusted position,

wherein said steering shaft assembly comprises a pair of stopper elements respectively integral with said upper and lower shafts to be abutted against each other when said upper shaft is moved downward over a predetermined stroke; an annular tapered projection integral with one of said shafts; and a single shock absorber element of elastic material in the form of a sleeve member coupled with the other shaft and located between said stopper elements, said shock absorber element being formed at one end thereof with an annular tapered portion to be coupled over said annular tapered projection by abutment with said stopper elements.

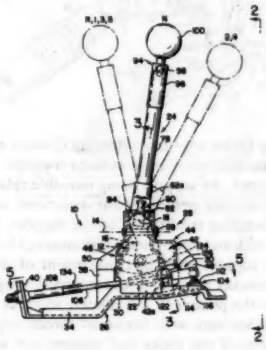
4,541,300
MANUALLY OPERABLE GEARSHIFT MECHANISM

Keith A. Kwiatkowski, Walled Lake; John E. Fernandez, Troy, and William J. LaRocca, Warren, all of Mich., assignors to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed Mar. 28, 1983, Ser. No. 479,575

Int. Cl.⁴ F16H *57/06*; G05G *9/12*

U.S. Cl. 74—476 **65 Claims**



1. In a manually operable gear shifting mechanism for displacing a pair of transmission gear actuators and comprising support means having upper and lower ends, first and second gear selector means mounted on said support means for pivotal movement together about a first axis between said upper and lower ends and for pivotal movement of said second selector means relative to said first selector means about a second axis perpendicular to said first axis, means to translate pivotal movement of said first and second selector means about said first axis to reciprocating movement of one of said gear actuators, means to translate pivotal movement of said second selector means about said second axis to reciprocating movement of the other of said actuators, and lockout means to releaseably limit pivotal displacement of said first and second gear selector means in one direction about said first axis, the improvement comprising, said support means including stop means above said first axis, said lockout means including lockout member means pivotal with said first and second selector means about said first axis and displaceable between locking and released positions, said lockout member means in said locking position engaging said stop means in response to pivotal movement of said first and second selector means in said one direction, and means to selectively displace said lockout member means from said locking to said released position in which said lockout member means is disengaged from said stop means to permit further movement of said first and second selector means in said one direction.

4,541,301
STEERING WHEEL

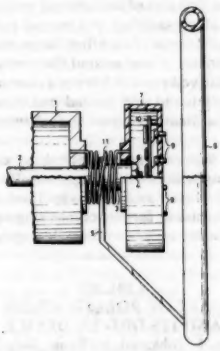
Satoshi Ono; Hiroshi Sugita, and Tetsushi Hiramitsu, all of Aichi, Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Aug. 16, 1984, Ser. No. 641,486

Claims priority, application Japan, Aug. 22, 1983, 58-152781; Sep. 14, 1983, 58-142920[U]

Int. Cl.⁴ B62D *1/04*

U.S. Cl. 74—484 R **7 Claims**



1. A steering wheel comprising:

(a) a column;

(b) a steering shaft extending through said column;

(c) a spoke mounted on said steering shaft;

(d) a steering ring supported on said spoke;

(e) a pad mounted on said steering shaft in front of said spoke; and

(f) a helical member interconnecting said pad and said column to fix said pad nonrotatably with respect to said column and helically coiled as a number of turns which is greater than the maximum number of rotations of said steering ring, said helical member having a portion extending across said spoke.

4,541,302

SUPPORT STRUCTURE FOR POWER TRANSMISSION CABLES

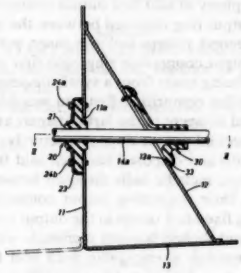
Keniti Yamamoto; Tenji Suzuki, both of Toyota, and Yukitomo Sanada, Okazaki, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 358,585, Mar. 16, 1982, abandoned. This application Jun. 26, 1984, Ser. No. 623,640

Claims priority, application Japan, Aug. 5, 1981, 56-116535[U]

Int. Cl.⁴ F16C *1/10*

U.S. Cl. 74—501 R **3 Claims**



1. In a vehicle body structure wherein a reinforcement panel is arranged at an angle within a vehicle compartment and fixed at one end thereof to the upper portion of an upright fire-wall panel in the form of a rear wall of an engine room and at the other end thereof to a floor panel of the compartment for mounting a power transmission unit together with an internal combustion engine in said engine room, wherein said fire wall panel is between said engine room and said reinforcement panel and wherein each of said panels is provided with a through hole through which at least a push-pull cable of said transmission unit extends into the compartment to be connected to a manual shift lever, a support structure for said push-pull cable comprising:

a first cover member of elastic material coupled over said through hole of said fire-wall panel, and

a second cover member of elastic material coupled over the through hole of said reinforcement panel and, together with said first cover member, closing an interior space between said panels, each of said first and second cover members being integrally formed at a substantially central portion thereof with a grommet through which said cable extends into the compartment from said transmission unit,

wherein a first bracket is coupled over said first cover member and fixed to said fire-wall panel in such a way as to resiliently clamp said cable in place, and said second cover member is fixed at a peripheral portion thereof to said reinforcement panel by means which resiliently support said cable but do not clamp said cable, whereby noise and vibrations are not transmitted from said engine room to said vehicle compartment.

4,541,303

FLEXIBLE COAXIAL PUSHPULL CABLE

Hiroyuki Kuzunishi, Nagoya, Japan, assignor to Chuo Hatsujo Kabushiki Kaisha, Nagoya, Japan

Continuation of Ser. No. 357,524, Mar. 12, 1982, abandoned. This application Aug. 27, 1984, Ser. No. 644,658

Claims priority, application Japan, Mar. 12, 1981, 56-34564

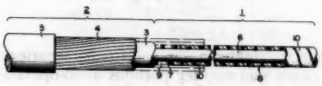
Int. Cl.⁴ F16C *1/10*

U.S. Cl. 74—501 R **11 Claims**

7. The combination comprising:

(a) a flexible coaxial pushpull cable comprising an outer cable member, an inner cable member disposed inside said outer cable member so as to be slidable lengthwise therein, said inner cable member having a projecting end portion which extends lengthwise beyond one end of said outer cable member, said inner cable member including a flexible working core of substantially circular cross section and a length of metal wire wrapped around said core in a helical configuration to define a helical groove between the helical wraps of said wire;

(b) a terminal tubular fitting means comprising a sleeve with an inner cylindrical opening which receives said projecting end portion of said inner cable member, said terminal tubular fitting means further comprising a tubular member disposed on said one end of said outer cable member and having a socket, said sleeve being provided with a ball member which is disposed in a swivel coupling relationship with said socket, a rod-shaped extension fitting slidable within said cylindrical opening in said sleeve, said rod-shaped extension fitting being connected to said projecting end portion of said inner cable member such that a push-pull action is transmitted between said rod-shaped extension fitting and said inner cable member as said rod-shaped extension fitting slides axially in said cylindrical



opening in said sleeve, said sleeve being angularly movable relative to said outer cable member as said ball swivels in said socket and said projecting end portion of said inner cable bends in the region of said swivel coupling, said inner cylindrical opening in said sleeve having a diameter greater than the outer diameter of said projecting end portion of said inner cable member to provide space for said projecting end portion of said inner cable to bend; and

(c) a resin reinforcement of said projecting end portion of said inner cable member, said resin reinforcement being a molded flexible polymeric material which is injection molded into said helical groove and which fills said helical groove such that said molded flexible polymeric material has a thickness which is substantially equal to the depth of said helical groove, said resin reinforcement thereby reducing bending deformation of said projecting end portion while providing a smooth peripheral surface on said projecting end portion to assure a smooth push-pull operation should said projecting end portion contact said sleeve as a result of bending of said projecting end portion.

4,541,304

CONNECTING ROD MADE OF FIBER REINFORCED PLASTIC MATERIAL

Kazuo Chikugo; Taku Murakami, and Yorihiko Inada, all of Oyama, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Mar. 25, 1983, Ser. No. 478,772

Claims priority, application Japan, Mar. 26, 1982, 57-41928; Sep. 17, 1982, 57-140006

Int. Cl.⁴ F16C *7/00*

U.S. Cl. 74—579 E **4 Claims**

1. A light weight sturdy connecting rod comprising:

a body;

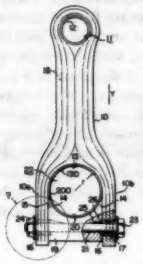
one end of the body having a piston pin bearing hole;

two leg portions formed in forked configuration at the other end of said body and having a recess of semi-circular cross section formed at the end an intermediate groove defined between the leg portions, said leg portions respectively having oppositely located bolt insertion holes formed in the leading ends thereof;

a block adapted to be fitted between the leg portions of the body and having a semi-circular recess defining a crank-

shaft bearing hole in opposed relationship with said semicircular recess formed at the end of the intermediate groove, said block having bolt insertion hole formed therethrough and extending coaxially with each of the bolt insertion holes respectively formed in said leg portions and notches respectively formed in both open ends of said bolt insertion hole thereof;

a bolt adapted to be passed through said three bolt insertion holes;



a nut for tightening up and fixedly securing said block between said two leg portions in co-operation of the bolt; and

wedge pieces each being pushed into each of said notches formed in the block by tightening up said nut threadably engaged with said bolt thereby pressing the block against the longitudinal inside of said body.

4,541,305

SPEED REDUCER

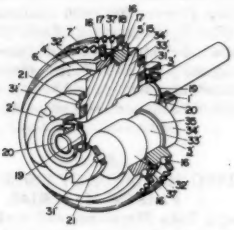
Takafumi Hamabe, Hikone; Hirozo Imai, Hirakata, and Hikoyoshi Hara, Shijonawate, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Mar. 1, 1983, Ser. No. 470,931

Claims priority, application Japan, Mar. 2, 1982, 57-33369

Int. Cl.⁴ F16H *13/06, 13/10*

U.S. Cl. 74—690 **4 Claims**



1. A speed reducer comprising:

a rotatably driven input shaft;

a plurality of elongated planetary rollers around the axis of said rotatably driven input shaft, each of said planetary rollers comprising a first roller and a second roller coaxial and integral with said first roller, said first roller having a larger diameter than said second roller, each planetary roller further comprising a third roller coaxial and integral with said first and second rollers, said second roller being disposed between said first and third rollers and said third roller having the same diameter as said first roller;

cylindrical output connection ring means coaxial with said input shaft and within which said planetary rollers are positioned, whereby said planetary rollers rotate and revolve within a space defined by said rotatably driven input shaft and said cylindrical output connection ring means, said cylindrical output connection ring means comprising a first and a second output connection ring, wherein said planetary rollers are positioned within said output connection ring means so that said first and said second rollers rotate and revolve within said first and said second output connection rings respectively, said first and second output connection rings having gear teeth on their outer peripheries, pressing means operable to press either said first output connection ring, said first rollers, and said rotatably driven input shaft together or said second output connection ring and said second rollers together, said pressing means comprising a first output ring disposed between the outer periphery of said first rollers and the inner periphery of said first output connection ring, and a second output ring disposed between the outer periphery of said second rollers and the inner periphery of said second output connection ring, said first and second output rings being made from a synthetic resin, said pressing means further comprising first and second washer means coaxial and adjacent to the farthest apart axial ends of said first and second output rings respectively, a third washer coaxial with and disposed between said first and second output rings, metallic balls disposed between said output rings and their respective output connection rings, said balls being fixed to a recess in the output connection rings, and first and second housing members, wherein said first housing member is engagable with said first washer to press said shaft, said first rollers, said first output ring, and said first output connection rings together, while said second housing member is engagable with said second washer to press said second rollers, said second output ring, and said second output connection ring together, whereby when said input shaft is rotated, said planetary rollers, said first or second output rings, and said first or second output connection rings respectively are caused to rotate.

4,541,306

DIFFERENTIAL HAVING REDUCED AXIAL WIDTH

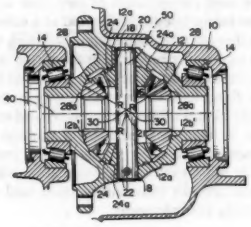
Hiroyasu Hokusho, Atsugi, and Yohji Ebara, Utsunomiya, both of Japan, assignors to Nissan Motor Co., Ltd., Japan

Filed Jan. 20, 1983, Ser. No. 459,650

Claims priority, application Japan, Mar. 2, 1982, 57-31820

Int. Cl.⁴ F16H *1/40*

U.S. Cl. 74—713 **4 Claims**



1. A differential mechanism comprising:

a casing adapted to be rotatably driven about an axis of rotation and having a chamber defined by walls;

a pair of pinion gears retained within said chamber rotatable about an axis of rotation normal to and having an intersecting point with said axis of rotation of said casing;

a pair of side gears retained within said chamber and engaging said pinion gears to form a differential gear mechanism;

each of said side gears having a part-spherical end wall;

means for retaining said side gears from rotating within said chamber about the axis of rotation of said pinion gears

including a pair of part-spherical regions defined in said chamber, each said region being defined by a wall of said chamber having a spherical shape substantially complementary to the end wall of one of said side gears and each said region providing a recess in said chamber for supporting one of said side gears;

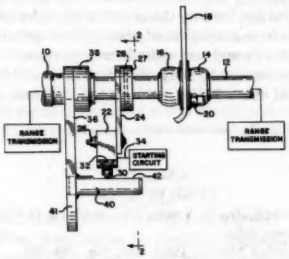
each of said side gear receiving part-spherical regions comprising part of a sphere having a center located on said axis of rotation of said casing and offset from said intersecting point in a direction providing a chamber extending lens in the axial direction of said casing than in the direction of the axis of rotation of said pinion gears.

4,541,307

START SWITCH MECHANISM

Glen R. Beliah, Bolingbrook, Ill., assignor to J. I. Case Company, Racine, Wis.

Filed Oct. 24, 1983, Ser. No. 544,924
Int. Cl.[4] B60K *41/04*
U.S. Cl. 74—850 **6 Claims**



1. A start switch mechanism for synchronization of a starting circuit actuation with a predetermined position of gears in a motor vehicle transmission:

a first shaft connected with a first series of gears and selectively engaging said gears in said transmission;

a second shaft connected with a second series of gears in said transmission for selective engagement thereof;

a switch means mounted on said first shaft and connected with said vehicle starting circuit;

an actuating means mounted on said second shaft and engaging said switch means for completing said starting circuit;

said actuating means contacting said switch means when said first and second shaft being placed in a position corresponding to said predetermined position.

4,541,308

HYDRAULIC CONTROL SYSTEM FOR ELECTRONIC TRANSMISSION CONTROL

Dennis W. Person, Rockwood; Stanley L. Pierce, Northville, and Polung Liang, Livonia, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 27, 1982, Ser. No. 453,301
Int. Cl.[4] B60K *41/04*
U.S. Cl. 74—868 **6 Claims**

1. A system for controlling the operation of an automatic transmission through which power is transmitted by gearing at various speed ratios between input and output members comprising:

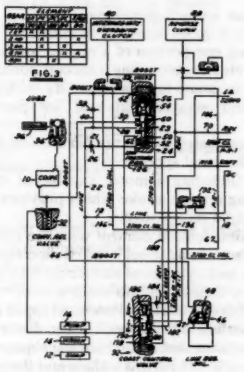
multiple clutch means for connecting and holding elements of the gearing whereby the various speed ratios are produced upon selectively pressurizing and venting the clutch means;

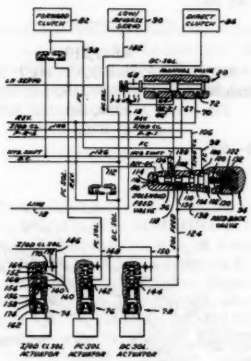
a source of pressurized hydraulic fluid;

manual valve means having multiple positions corresponding to selected operating modes of the transmission for opening communication between the fluid pressure source and a first outlet when the manual valve is set at a forward drive position;

feedline valve means having a spool movable between first and second states on which are formed multiple differential pressure areas of substantially equal net size for hydraulically connecting the first outlet of the manual valve to a first outlet feedline when the spool is in the first state, and to a second outlet feedline when the spool is in the second state;

means communicating each clutch with a respective differential pressure area of the feedline valve spool on which are developed pressure forces that bias the spool to its second state;





feedback valve means communicating with the first feedline having a pressure area whose size is at least one net differential pressure area less than the total net differential pressure areas of the valve spool, on which area is developed a pressure force that biases the spool to its first state and a spring for biasing the valve spool to the first state;

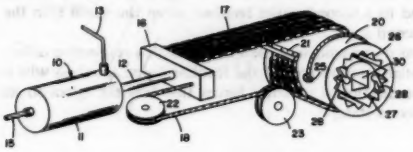
actuating means for pressurizing the clutch means from the first feedline and for venting the clutch means; and

means for selectively communicating the second feedline to those clutch means whose engagement produces a predetermined speed ratio.

4,541,309
TORQUE WRENCH

Jerome N. Herrick, P.O. Box 11267, Oakland, Calif. 94611

Filed Jan. 13, 1984, Ser. No. 570,657
Int. Cl.[4] B25B *13/00, 13/46*
U.S. Cl. 81—57.46 7 Claims

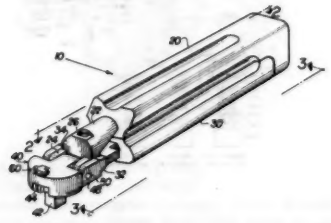


1. A torque wrench comprising:
a cylindrical spool mounted to rotate on its long axis and including one portion of a ratchet means,
a ratchet element including a second portion of said ratchet means, mounted in an axial cavity within said cylindrical spool and engaged with said first portion of a ratchet means,
a driver connected to said ratchet element to be coaxial with said cylindrical spool,
a handle including a motor capable of reciprocal motion including a work stroke which provides a predetermined force and a return stroke,
a first flexible tension element wrapped around the cylindrical surface of said spool in a first direction, having one end fixed to said cylindrical surface and the other end fixed to be put in tension by said work stroke,
a second flexible tension element wrapped around the cylindrical surface of said spool in the direction opposite said first direction, said second tension element having one end fixed to said cylindrical surface and the other end fixed to be put in tension by a return stroke of said motor, and
the length of said work stroke being limited so that said first tension element is wrapped around said cylindrical spool less than 360°.

4,541,310
MULTIPLE-USE RATCHET TOOL

Paul H. Lindenberger, 1241 NW. 190 St., Miami, Fla. 33269

Filed Aug. 2, 1984, Ser. No. 636,920
Int. Cl.[4] B25B *13/46*
U.S. Cl. 81—60 12 Claims

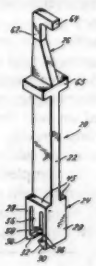


1. A multi-function ratchet tool comprising:
a ratchet head having a reversible output shaft for use, the axis of said output shaft generally perpendicular to the lower surface of said ratchet head;
said lower surface defining a tool and work engaging surface;
an elongated generally cylindrical handle having main and auxiliary handle portions;
said main and auxiliary handle portions each having a distal end and a proximal end and a shank therebetween;
said distal end of said main handle portion enlarged relative to said main handle portion shank and proximal end;
said auxiliary handle portion adapted to mate in side-by-side relation against said shank of said main handle portion forming said handle such that said distal end of said auxiliary handle portion is adjacent and within said enlarged distal end of said main handle portion;
said main handle portion pivotally connected at its proximal end to said ratchet head, the axis of said pivotal connection between said main handle portion proximal end and said ratchet head perpendicular to, and laterally displaced from, said output shaft axis and positioned generally parallel to, and in close proximity to, said lower surface;
said auxiliary handle portion pivotally connected at its proximal end to said ratchet head coaxially with said pivotal connection between said main handle portion proximal end and said ratchet head;
first releasable locking means between said auxiliary handle portion and said main handle portion for retaining said auxiliary handle portion against said shank of said main handle portion;
second releasable locking means between said ratchet head and said main handle portion for retaining said main handle portion in parallel relation to said axis of said output shaft;
first stop means for limiting the pivoting of said auxiliary handle portion to a maximum of about 90° in relation to said output shaft axis and said main handle portion;
second stop means for limiting the pivoting of said handle to a maximum of about 90° in relation to said output shaft axis.

4,541,311
FUSE PULLER

Earl M. Trammell, Jr., St. Louis, Mo., assignor to Idea Pioneer, Inc., St. Louis, Mo.

Filed May 3, 1982, Ser. No. 354,381
Int. Cl.[4] B25B *27/14*
U.S. Cl. 81—3.8 12 Claims



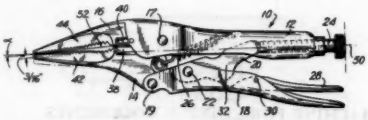
1. A tool to facilitate the insertion and removal of at least a blade-type fuse from a spring clip receptacle, the fuse having an enlarged head with a raised shoulder surrounding same, said shoulder having a generally flattened lower surface, said tool comprising a generally elongated handle portion for grasping the tool during use, and a pair of resilient, opposing tines depending generally colinearly from the handle, said tines having means to positively engage the lower surface of the shoulder on generally opposite sides of the fuse, the tines being resilient and having a beveled surface on the end of each tine for resiliently separating the tines as the beveled surface of the tines are forced against the fuse head, the tines resiliently snapping back after the beveled surface clears the shoulder thereby bringing the shoulder engaging means into contact with the lower surface of the shoulder, the tool being thereby attached to an inserted fuse for removal thereof, and a stem depending generally colinearly between the tines to engage the top of the fuse head so that the large fuse head may be captured between the tines and the stem during use of the tool.

4,541,312

LONG NOSE LOCKING PLIER

Christian Petersen, DeWitt, Nebr., assignor to Petersen Manufacturing Co., Inc., DeWitt, Nebr.

Filed Mar. 6, 1981, Ser. No. 241,085
Int. Cl.[4] B25B *7/12*
U.S. Cl. 81—367 **12 Claims**



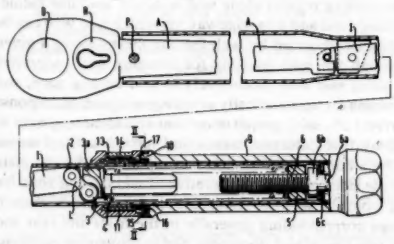
1. A long nose locking hand tool having a pair of opposing jaw members, a fixed handle and a movable handle and lever locking means therebetween for maintaining a toggle relationship between the jaws when in a closed position; and wherein each of said jaw members comprising a jaw face configuration having a total jaw length to average jaw height ratio of from about 6.5 to about 8.5 with a through jaw hardness range of from about 53 to about 57 Rockwell C, with said jaw members made of an alloy spring steel, said jaw members having a nominal parallel opening when they are spaced apart approximately 3/16 inch, thereby enabling said jaw members to clamp a workpiece up to 3/16 inch thick with parallel jaw faces by flexing to the parallel condition when closed and returning to their original unstressed state when released of clamping pressure.

4,541,313

ADJUSTABLE TORQUE WRENCH

Douglas F. Wise, Wardington, Nr Banbury, England, assignor to Norbar Torque Tools Limited, Banbury, United Kingdom

Filed Nov. 15, 1983, Ser. No. 551,729
Int. Cl.[4] B25B *23/142*
U.S. Cl. 81—478 **4 Claims**



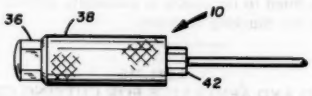
1. An improved torque wrench comprising an elongate tubular handle one end of which has a tube coaxial with and overlying the handle, the tube forming a hand grip rotatable with respect to the handle, a screw threaded member extending within the handle at said one end and connected to be rotatable with said tube, a nut on the screw threaded member restrained against rotation relative to the handle but longitudinally movable in said handle, the nut forming a means to adjust the compression of a spring acting on one end of a lever arm, extending along the tubular handle and connected with a work engaging member at the other end of the handle, the spring maintaining the lever arm in a first stable position, application of torque through the handle to the workpiece and exceeding a value set by compression applied to the spring by the nut causing the lever arm to pivot to a second unstable position to provide indication of the set torque loading, the arm thereafter returning to the said first stable position on release of the torque load, wherein the improvement comprises a scale means to indicate the torque loading set by the compression of the spring, the scale means being positioned concentrically around the handle and having a first dynamic splined member rotatable within an end of the hand grip and a second fixed splined member secured to the handle, the splined members being positioned one within the other, the number of splines on each respective spline member differing, the end of the hand grip having a flat or flats engaging a portion of the peripheral surface of the said dynamic spline to force same to engage the said fixed spline, the said dynamic spline being associated with a scale member rotatable relative to an indicator.

4,541,314

POWER DRIVEN HAND TOOL

Richard Korkowski, 16 Wilkens Dr., Piscataway, N.J. 08854

Filed Feb. 23, 1984, Ser. No. 583,049
Int. Cl.[3] B25B *13/00*
U.S. Cl. 81—58.1 **3 Claims**



1. A hand tool, power driven by a ratcheting mechanism, the hand tool comprising in combination:

a shank having a longitudinal axis;

an elongated cylindrical handle having a rounded distal end, a shank end to which the shank is attached, a first circumferential surface of smaller diameter than cylindrical handle with a plurality of faces at the distal end of the handle and a second circumferential surface of smaller diameter than cylindrical handle with a plurality of faces at the shank end of the handle,

a ratcheting mechanism engagable with said plurality of faces,

wherein the ratcheting mechanism engages the hand tool via the plurality of faces for driving the hand tool about the longitudinal axis of the shank, said ratcheting mechanism being so positioned that the rounded distal end of the handles protrudes there through.

4,541,315

INSIDE CHUCK DEVICE FOR MACHINE TOOLS

Hisanobu Kanamaru; Akira Tohkairin, both of Katsuta, and Takuzo Kurosawa, Hitachi, all of Japan, assignors to Hitachi, Ltd. and Kawamura Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 279,021, Jun. 30, 1981, abandoned.
This application Apr. 16, 1984, Ser. No. 600,953
Claims priority, application Japan, Mar. 26, 1980, 55-37430
Int. Cl.[4] B23B *33/00*
U.S. Cl. 82—40 R **4 Claims**

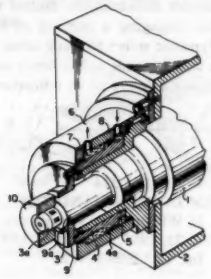
1. An inside chuck device for machine tools, the inside chuck device comprising:

a spindle rotatably carried by a spindle bed and provided at its end portion with a chuck mount;

a mandrel chuck formed of a hard metal and concentrically secured to an end of said chuck mount, said mandrel chuck including a guide portion for guiding and centering a workpiece and a plurality of axially extending projections provided on an outer periphery of a chuck portion adjacent to said guide portion;

a force-out pipe concentrically disposed and axially slidably provided on an outer periphery of said chuck mount for urging an end surface of said workpiece by an external

force; and, wherein a workpiece having an inside diameter substantially equal to an outside diameter of said chuck is



press fitted to the chuck to plastically deform the workpiece for chucking the latter.

4,541,316

METHOD AND APPARATUS FOR CUTTING CIRCULAR OR OVAL PIPES

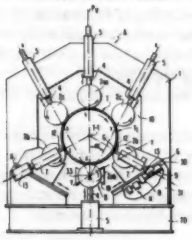
Claude Fuminier, Pont A Mousson, France, assignor to Pont A Mousson S.A., France

Filed Sep. 15, 1983, Ser. No. 532,630

Claims priority, application France, Sep. 29, 1982, 82 16390

Int. Cl.⁴ B23B *3/04, 5/14*

U.S. Cl. 82—59 **10 Claims**



1. Apparatus for cutting tubes (T), comprising:

a stationary frame (**1**) having an opening (**10**) through which the tube (T) to be cut lies horizontally.

rotational driving means (**3**);

a series of rollers (**2***aa*, **2***ab*, **2***b*) fastened onto the frame (**1**) and the axis of each said roller being parallel to a first longitudinal axis, said longitudinal axis being parallel to the longitudinal axis of said tube, whereby said rollers support and maintain said tube at least one of said rollers being connected to said driving means and turning said tube (T) about its longitudinal axis (T—T), whereby the tube (T) remains translationally stationary;

a lower center roller (**2***ab*) and at least one roller being an upper side roller (**2***c*) adjustable along an axis (x—x) perpendicular to a horizontal line lying in the axial vertical plane containing said first longitudinal axis and forming the axis of rotation (**33**) of said lower center roller, said perpendicular axis (x'x) being inclined (α) relative to said axial vertical plane.

at least one cutting tool (**12**);

means for adjusting said cutting tool along a first line perpendicular to and passing through said first longitudinal axis, for cutting the tube;

a common support-piece (**20**) connected to said cutting tool and supporting one roller supporting said tube (**2***b*) of said series of rollers; and

means for moving said support-piece within a plane, the normal of which is perpendicular to said first longitudinal axis, said cutting tool and said one roller being mechanically paired in the direction of said first line.

4,541,317

MACHINE FOR CUTTING DOCUMENTS

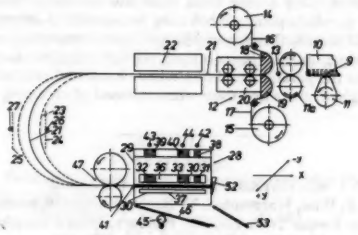
Freddy J. Van Humbeeck, Keerbergen; Jean Burtin, Mol, and Johnny P. Van Meenen, Deuren, all of Belgium, assignors to AGFA-Gevaert N.V., Mortsel, Belgium

Filed Oct. 12, 1983, Ser. No. 541,298

Claims priority, application United Kingdom, Oct. 22, 1982, 8230256

Int. Cl.⁴ B26D *5/34*

U.S. Cl. 83—34 **13 Claims**



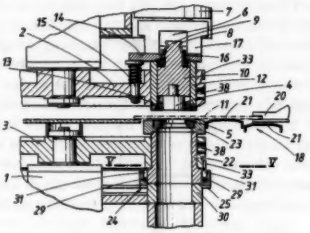
1. In a cutting machine adapted for cutting opaque documents from a transparent carrier web on which they are carried at successive regions along said web, said machine including a cutting zone and a passageway via which said web can be longitudinally advanced by web feeding means along a given path through the said machine for bringing said successive regions along said web successively to said cutting zone, and having means for automatically arresting said web in response to the arrival of a said opaque document at said cutting zone as detected by first detection means and having cutting means defined by a cooperating assembly of a punch and a die plate on opposite sides of the web operative at said cutting zone for severing from the web the document-carrying portion thereof along lines corresponding generally to the front and rear and opposite side ege of said document, the improvement comprising means supporting said cutting assembly for lateral bodily movement in directions (+Y, −Y) transverse to said web path and pivotable movement bodily about an axis (M) perpendicular to the plane of the web portion passing through said cutting zone; positional adjustment means operative for effecting said transverse and pivotal movements of said cutting assembly; further detection means operatively associated with said positional adjustment means for detecting the lateral position and angular orientation of an arrived document relative to the center axis of the path of said web through said cutting machine, said further detection means being operative to actuate said positional adjustment means to effect such transverse and pivotal movement of said cutting means to bring the latter into lateral and angular alignment with the actual lateral position and angular orientation of said document on said web, said first and further detection means comprising photocells located on one side of the web path, in line with slits extending perpendicularly through said punch, and at least one cooperating light source located at the other side of said web path.

4,541,318

PRESS FOR FORMING SHEET METAL ELEMENTS

Dietrich Kreuzgruber, Leonding, Austria, assignor to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Jul. 24, 1984, Ser. No. 633,787
Claims priority, application Austria, Aug. 17, 1983, 2944/83
Int. Cl.[4] B26F 1/14
U.S. Cl. 83—409 4 Claims



1. In a press for forming sheet metal elements comprising a frame,
an upper turntable mounted in said frame for rotation on a vertical axis,
a lower turntable disposed under said upper turntable and mounted in said frame for rotation on said axis,
a plurality of angularly spaced apart, downwardly facing upper press tools, which are mounted on said upper turntable with the same radial spacing from said axis and are vertically displaceable relative to said upper turntable,
a plurality of angularly spaced apart, upwardly facing lower press tools mounted on said lower turntable and vertically aligned with respective ones of said upper press tools
a punch, which is mounted in said frame with approximately the same radial spacing from said axis as said upper press tools and is vertically movable relative to said frame,
means for rotating said upper and lower turntables in unison about said axis to a plurality of angular positions, in which respective ones of said upper press tools are vertically aligned with said ram,
coupling means for coupling said ram to each of said upper press tools when the same is vertically aligned with said ram, and
ram-actuating means for vertically reciprocating said ram,
the improvement residing in that
each of said lower press tools is mounted in said lower turntable to be individually vertically movable relative to said lower turntable to and from a lower position, in which said lower press tool protrudes below said lower turntable,
said frame carries an abutment, which is disposed below said lower turntable and axially aligned with aid ram and is adapted to support each of said lower press tools in a position above said lower position when said lower press tool is vertically aligned with said ram, and
lowering means are provided for moving those of said lower press tools which are adjacent to the lower press tool that is vertically aligned with said ram to said lower position.

4,541,319

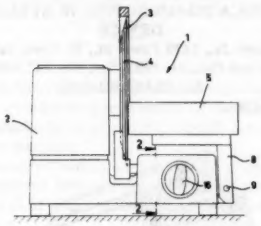
COLD MEAT SLICING MACHINE

Albrecht Maurer, Balingen, and Alois Butz, Geislingen, both of Fed. Rep. of Germany, assignors to Bizerba-Werke Wilhelm Kraut GmbH & Co. KG, Fed. Rep. of Germany

Filed Jan. 27, 1984, Ser. No. 574,675
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1983, 3304586
Int. Cl.[4] B26D 7/06, 7/22
U.S. Cl. 83—707 7 Claims

1. Cold meat slicing machine comprising a machine housing, a rotating circular cutter blade rotatably mounted on the machine housing, a stop plate adjustable relative to the circular cutter blade for setting the thickness of cut, a device for adjusting the stop plate, a carriage, reciprocatable on the housing and swivable away from the housing, for depositing and advancing stock to be sliced, and a locking device which, on the one hand, prevents swivel motion of the carriage when the stop plate is set at a thickness of cut other than zero, and, on the other hand, excludes adjustment of the stop plate set at the zero thickness of cut when the carriage is swivelled, characterized by the following features of the locking device:

a. a slider member (12) is articulated at the carriage (5,8);
b. at a thickness of cut setting other than zero, a stop face (15) of the slider member engages a counter stop member (14) fixedly attached to the carriage and prevents swivel motion of the carriage;
c. a bar (23) extending over the path of displacement of the carriage is swivable about an axis (24), arranged stationarily in the housing and extending parallel to this path of displacement, between two end positions, namely a first



end position in which it is in disengagement with the slider member, and a second end position in which it releases the stop face of the slider member from the counter stop member and permits swivel motion of the carriage;
d. connected to the adjusting device (16,17) of the stop plate (4) is a pin (28) which, at the zero thickness of cut setting, transfers the bar from its first to its second end position;
e. attached to the bar is a claw (29) which, in the second end position of the bar, engages the device for adjusting the stop plate and locks the latter at the zero thickness of cut setting;
f. disposed on the slider member is a supporting surface (27) which, in the swivelled-out position of the carriage, supports the bar located in its second end position and holds the claw in locking engagement with the device for adjusting the stop plate;
g. the slider member is provided with an edge (31) which is engaged by the counter stop member (14) when the carriage is swivelled.

4,541,320

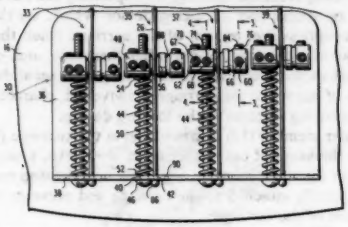
STRINGED INSTRUMENT SADDLE LOCK

Michael N. Sciuto, 503 Castle Dr., Apt. E, Baltimore, Md. 21212

Filed Jan. 20, 1983, Ser. No. 459,589
Int. Cl.[4] G10D 3/04
U.S. Cl. 84—298 16 Claims

1. A bridge for a stringed instrument, comprising:
a plate;
a flange substantially perpendicular to said plate;
means for coupling said plate to the stringed instrument;
at least one drum adjustably mounted on said plate, said drum having a horizontally threaded bore;

an elongated harmonic adjustment screw extending through said flange and said horizontally threaded bore; and



set screw means for preventing rotation of said harmonic adjustment screw.

4,541,321

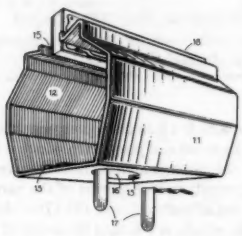
HARMONICA-TO-MICROPHONE ATTACHMENT DEVICE

Robert J. Miner, Jr., 1429 Fewel St., El Paso, Tex. 79902

Filed Oct. 31, 1983, Ser. No. 547,336

Int. Cl.[4] G10D *7/12*

U.S. Cl. 84—379 **3 Claims**



1. A harmonica support clamp for attaching a harmonica to a microphone and a microphone support stand comprising:

two parallel juxtaposed harmonica clamping edges, each said edge being a continuation of a clamping side wall, the two clamping side walls being supported by and a continuation of a common central base wall;

said base wall having in it a microphone insertion opening comprising an aperture;

a pair of microphone mounting brace clamps, each clamp comprising a pair of parallel flanges forming a channel on said base wall, each channel extending radially from an edge of said aperture;

and two L-shaped microphone mounting braces, a portion of each brace being inserted into a respective one of said channels from an end of said channel adjacent an edge of said aperture, a remaining portion of each of said braces extending away from said base wall.

4,541,322

MUSICAL INSTRUMENT MALLET AND METHOD OF MAKING THE SAME

Joseph S. Calato, Ransomville, N.Y., assignor to J. D. Calato Manufacturing Co., Inc., Niagara Falls, N.Y.

Filed May 16, 1983, Ser. No. 494,940

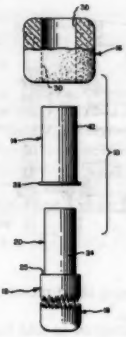
Int. Cl.[4] G10D *13/00*

U.S. Cl. 84—422 S **16 Claims**

1. A musical instrument mallet comprising:

a shaft having a handle portion and a head portion including an end section;

an elongated deformable thin-walled sleeve closely accepted upon said end section of said shaft head portion, provided with anchor means protruding from said sleeve into said head portion end section and which anchor said sleeve directly to said end section, and having a first flange at one longitudinal end of said sleeve and a second flange at the other longitudinal end of said sleeve, said flanges extending generally away from the longitudinal axis of said sleeve; and



a playing head closely accepted about said sleeve so as to cover said anchor means and held thereabout between said flanges of said sleeve, said flanges being in compressive engagement with the opposite sides of said playing head whereby said playing head is tightly held upon said shaft head portion between said flanges.

4,541,323

WARSHIP WITH UNITS CONNECTED VIA ELECTRONIC CONTROL APPARATUSES

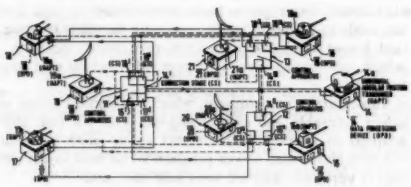
Karl O. Sadler, and Jonny Worzeck, both of Hamburg, Fed. Rep. of Germany, assignors to Blohm + Voss AG, Hamburg, Fed. Rep. of Germany

Filed Dec. 16, 1982, Ser. No. 450,167

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1981, 3150895

Int. Cl.[4] B63G *13/00*; **F41G** *3/00*

U.S. Cl. 89—41.14 **2 Claims**



1. A warship having a longitudinal axis and a main datum plane comprising at least one weapon unit and at least one sensing unit for controlling the relative angular position of the weapon unit, each unit being mounted on the ship on a respective bedding plane and pivotally movable in a generally horizontal plane through a range of horizontal angles and in a generally vertical plane through a range of vertical angles, the sensing unit providing as an output crude control information relating to the horizontal and vertical angles for a desired position of the weapon unit; a horizontal angular position transducer for each of the sensing and weapon units generating electrical signals during pivotal movement of the units in the horizontal plane representative of the instantaneous horizontal angular position of the associated unit; electronic control means receiving as a first input the crude information for

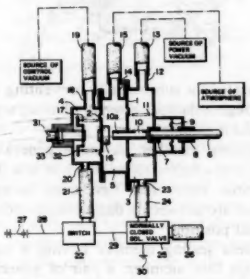
generating therefrom a control signal determining the horizontal and vertical angles corresponding to the desired position of the weapon unit and corrected for misalignments of the bedding planes of the sensing and weapon units relative to the datum plane, the electronic control means included preloaded memories storing bedding error values reflecting misalignments of the respective bedding planes of the sensing unit and the weapon unit from the datum plane for all possible angular positions of the sensing unit and the weapon unit; means providing as a second input to the electronic control means said electrical signals generated by the transducers for selecting the appropriate address in the preloaded memory storing the bedding error values for the respective angular positions of the units; the electronic control means applying the appropriate bedding error values selected from the memories to the crude information to thereby generate the control signal as the output of the electronic control means; and means for applying the control signal to the weapon unit for moving the weapon unit into the desired position, corrected for misalignments between the respective bedding planes and the datum plane.

4,541,324

VACUUM ACTUATOR WITH FAIL-SAFE SYSTEM

Kimio Tomita, Hachioji, Japan, assignor to Nissan Motor Company, Ltd., Japan

Filed Oct. 10, 1984, Ser. No. 659,353
Claims priority, application Japan, Oct. 31, 1983, 58-202892
Int. Cl.⁴ F15B *13/044, 9/10;* **F01B** *19/00*
U.S. Cl. 91—392 **5 Claims**



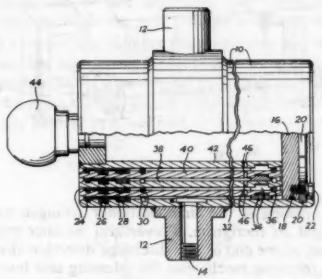
1. A vacuum actuator comprising:
a housing;
a power diaphragm mounted within said housing and having one side defining a power diaphragm chamber and an opposite side defining a leak chamber;
a push rod fixedly connected to said power diaphragm and movable therewith;
a source of power vacuum connected with said power diaphragm chamber;
means for biasing said push rod and said power diaphragm toward said leak chamber;
means defining a passage having one end communicating with said power diaphragm chamber and an opposite end communicating with said leak chamber;
means, including a valve element cooperating with said passage, for controlling flow communication between said power diaphragm chamber and said leak chamber;
means for detecting a failure in normal operation of said flow communication controlling means and generating an output signal; and
means responsive to said output signal for rendering substantially the same pressure to prevail in both of said power diaphragm chamber and said leak chamber.

4,541,325

TELESCOPIC CYLINDER CONSTRUCTION

Merle M. Sheriff, Carlsbad, Calif., assignor to Hydraulic Technology Corporation, Naples, Fla.

Continuation of Ser. No. 294,818, Aug. 20, 1981, abandoned.
This application Feb. 6, 1984, Ser. No. 577,164
Int. Cl.⁴ F01B *7/20*
U.S. Cl. 92—52 **4 Claims**



1. A telescopic fluid pressure cylinder, comprising:
(a) a hollow cylindrical base member of substantially uniform wall thickness throughout its length arranged to be mounted for support,
(b) the base member having an end closure at one end,
(c) the base member having a fluid pressure passageway for introducing fluid under pressure into the interior of said base member,
(d) the base member having near its open end a set of longitudinally spaced machined grooves on its interior surface removably mounting a ring set including a stop ring, a seal ring outwardly of the stop ring and a bearing ring outwardly of the seal ring,
(e) at least one telescoping cylinder stage slidably received through said ring set in the base member,
(f) each telescoping cylinder stage being of substantially uniform wall thickness throughout its length and having a set of internal machined grooves near its outer end removably moving a ring set including a stop ring, a seal ring outwardly of the stop ring and a bearing ring outwardly of the seal ring, each cylinder stage also having near its opposite end an internal machined groove removably receiving a lifting ring and an external machined groove removably receiving a guide bearing ring arranged for abutment at its inner end with the lifting ring of the adjacent outer cylinder stage, and at its outer end with the stop ring of the same adjacent outer cylinder stage, and
(g) a piston slidably received through the rings in the innermost cylinder stage and having an external machined groove near its inner end removably receiving a guide bearing ring arranged for abutment at its inner end with the lifting ring of the adjacent telescoping cylinder stage.

4,541,326

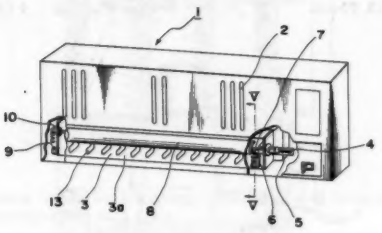
DISCHARGE DIRECTION CONTROL DEVICE FOR AIR CONDITIONER

Katsumi Fukuda, Shiga; Masaharu Ebihara, Kusatsu; Tadahiko Hayakumo, Shiga, and Tsunehiko Todoroki, Kusatsu, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jun. 29, 1984, Ser. No. 626,122
Claims priority, application Japan, Jul. 1, 1983, 58-120554; Jul. 1, 1983, 58-120552
Int. Cl.⁴ F24F *7/00*
U.S. Cl. 98—40.25 **5 Claims**

1. A discharge direction control device for an air conditioner, which comprises a discharge direction changing blade

for controlling the discharge direction of air flow upwardly and downwardly, a shape memory alloy member for rotating the discharge direction changing blade in one direction, and a bias spring member for urging said discharge direction changing blade to rotate in the other direction which are provided at



an air blast opening of the air conditioner arranged to blast heat-exchanged air therefrom, a lever arm member urged to contact a shaft at one end of said discharge direction changing blade, and a releasing mechanism for releasing said lever arm member from the contact thereof with said shaft.

4,541,327

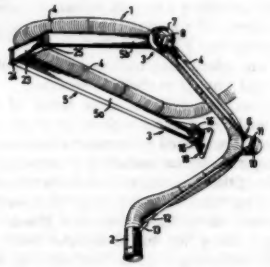
LOCAL EXTRACTION DEVICE

Barry Lundström, Skellefteå, Sweden, assignor to Fumex AB, Skellefteå, Sweden

Filed Mar. 9, 1984, Ser. No. 588,117

Int. Cl.⁴ F24F *11/00*

U.S. Cl. 98—115.4 **5 Claims**



1. A local extraction device for removal of gas and particulate matter from a work area, the local extraction device including a flexible hose for cooperation with suction means, and support means for supporting the hose, the support means comprising:

mounting means for mounting the support means on a generally vertical surface;

a hinged supporting arm supported by the mounting means and pivotal about a substantially vertical axis;

an operating arm pivotally connected to the supporting arm for movement about an axis substantially perpendicular to said substantially vertical axis; and

a first friction joint pivotally connecting the operating arm to the supporting arm;

said supporting arm having a rectangular cross-sectional form and comprising an inner arm portion supported by said mounting means, an outer arm portion connected to said operating arm by means of said first friction joint, and link member located between said inner and outer arm portions and connected to the outer end of the inner arm portion by a first pivot for movement about said pivot and to the inner end of the outer arm portion by a second pivot for movement about said second pivot, said pivots being in parallel with each other and with said substantially vertical axis, and said link member having a length shorter than that of the inner arm portion and that of the outer arm portion of said hinged supporting arm.

4,541,328

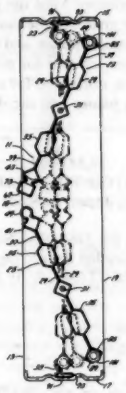
DAMPER SEAL APPARATUS

Donald E. Brzezinski, Waukesha, Wis., and Christy C. Kadue, Minneapolis, Minn., assignors to Johnson Service Company, Milwaukee, Wis.

Filed Feb. 6, 1984, Ser. No. 577,057

Int. Cl.⁴ E06B *7/086*

U.S. Cl. 98—121.2 **5 Claims**



1. Sealing apparatus for substantially preventing the flow of gaseous fluid through a damper assembly having a plurality of movable vanes and including:

a first rigid sealing member having a generally circular cross-section and adapted to be attached to a first edge of a first movable vane, said first edge being movable through a first arc between a damper-open position and a damper-closed position;

a second, resilient sealing member having a top wall for contacting said first member, a pair of generally planar side walls and a bottom wall, said walls defining a generally rectangular cross-section, said second member being adapted to be attached to a second edge of a second movable vane, said second edge being movable through a second arc between said damper-open position and said damper-closed position;

said second sealing member having said generally rectangular cross-section when said movable vanes are in said damper-open position;

said sealing members making substantially line contact one with the other as said edges are moved toward said damper-closed position;

said side walls being maintained generally planar when said vanes are at said damper-closed position.

4,541,329

CHEESE COOKING SYSTEM

Angelo Mongiello, 1655 84th St., Brooklyn, N.Y. 11214

Filed Sep. 28, 1983, Ser. No. 536,595

Int. Cl.⁴ A01J *25/00*; A23C *19/00*

U.S. Cl. 99—455 **21 Claims**

1. A cheese cooking system comprising in combination:

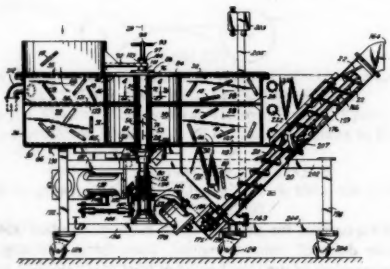
a source of temperature-controlled hot water,

tank means including a holding tank for receiving, containing, and discharging said hot water and for receiving

sliced curd product from a tank receiving station, said tank means containing and cooking said sliced curd product in said hot water, and discharging cooked curd product to a tank discharge station, said holding tank defined by a vertical cylindrical side wall having a substantially vertical tank axis and a substantially horizontal bottom wall secured to said cylindrical side wall, said cylindrical side wall having atop rim in a plane substantially vertical to said bottom wall,

means for delivering said sliced curd product to said tank receiving station,

a first drive means associated with said tank means for moving said sliced curd product from said tank receiving station to said tank discharge station over a predetermined time, said sliced curd product having become partially cooked curd product upon reaching said tank discharge station, said first drive means including an upper rotatable mounting drum having a cylindrical upper drum side wall and an upper drum axis axially aligned with said holding tank axis, opposed substantially horizontal top and bottom upper drum covers, said top upper drum cover being substantially in a plane with said top rim of said tank; a



lower rotatably mounted drum mounted under said upper drum and having a cylindrical lower drum side wall having a height and diameter approximately equal to a height and diameter of said upper drum, said lower drum having an axis axially aligned with said holding tank axis, and opposed substantially horizontal top and bottom lower drum covers, said bottom lower drum cover being rotatably associated with said bottom wall; said upper and lower drum cylindrical side walls, said cylindrical tank side wall, and said tank bottom wall forming a tank compartment; and a shaft having opposed upper and lower shaft portions, said upper shaft portion being axially mounted with and rotatably connected to said upper and lower drums, said lower shaft portion extending below said bottom wall,

stretching means connected to said tank means for receiving said cooked curd product from said tank discharge station and for working said partially cooked curd product in said temperature-controlled hot water, said stretching means delivering said partially cooked curd product to a stretching means discharge station as a fibrous cheese product which is free of said hot water, and

a second drive means for driving said stretching means.

4,541,330

METHOD OF AND APPARATUS FOR SEPARATING WHITE FROM YOLK OF AN EGG

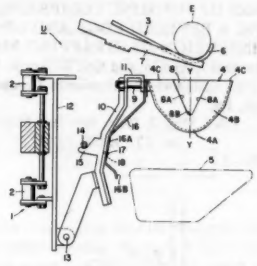
Gen Fujimura, Tokyo, Japan, assignor to Kewpie Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 17, 1984, Ser. No. 571,489
Claims priority, application Japan, Dec. 6, 1983, 58-230436
Int. Cl.⁴ A23J *1/09*
U.S. Cl. 99—500 **6 Claims**

1. An apparatus for separating the white of an egg from the yolk thereof while the apparatus is moving on a high-speed automatic egg-breaking machine, said apparatus comprising:

(a) a separating cup for receiving the contents of an egg broken by an egg breaking assembly in order to separate the white of the contents from the yolk thereof, said separating cup having an escape opening formed in a portion of a side wall of said separating cup which is the back wall of said separating cup with respect to the direction of motion of said separating cup, said escape opening being sized, shaped, and positioned so that the white flows out of said separating cup through said escape opening while the yolk remains in said separating cup;

(b) a supporting member for supporting said separating cup so that said separating cup can swing in its direction of motion about a horizontal pivot axis perpendicular to its direction of motion, said supporting member being pivotally held, at its lower part, by a conveyor for moving both



said separating cup and the egg breaking assembly at the same time; and

(c) an adjusting lever extending along said supporting member for swinging said separating cup to set the inclination angle of the cup in its direction of motion, said adjusting lever being elastically biased so that its middle portion elastically abuts against the adjacent surface of said supporting member, the middle portion of said adjusting lever being releasably connectable to said supporting member in a plurality of different angular positions, the lower portion of said adjusting lever forming an operating portion which extends outwardly from said supporting member so that an operator can easily manipulate the lower portion of said adjusting lever so as to connect the middle portion of said adjusting lever to said supporting member at an inclination angle selected as a function of the characteristics of the eggs being broken.

4,541,331

APPARATUS FOR ROUTERING TUBEROUS SPROUTS

Hirokichi Narisawa, Minamishimoura-machi, Miura-shi, Kanagawa-ken, and Tatsuo Nagaoka, Kohoku-ku, Yokohama-shi, Kanagawa-ken, both of Japan

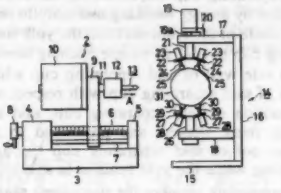
Filed Jun. 6, 1984, Ser. No. 617,937
Claims priority, application Japan, Jun. 7, 1983, 58-100192
Int. Cl.⁴ A23N *15/00*
U.S. Cl. 99—567 **12 Claims**

1. An apparatus for routering tuberous sprouts, said apparatus being provided with a drill-like blade having a distal end with a tapered portion and a blade rotating motor for rotating said drill-like blade, comprising:

a drilling unit having a feeding unit for reciprocating said drill-like blade toward said sprouts;

a holding member comprising a rotating member and a tuber motor, said rotating member having a hydropneumatic cylinder with clamping members for clamping a tuber, and said tuber motor being arranged to rotate said rotating member; and

a photosensor provided in said drilling unit for transmitting a control signal to control said tuber motor and cooperatively rotate and move the drill-like blade of the drilling unit to router a sprout from said tuber.

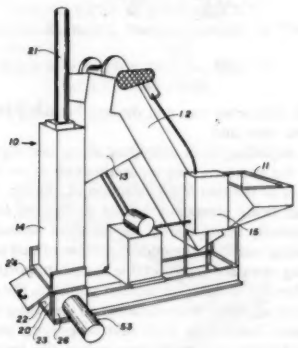


4,541,332

METHOD OF FORMING COMPRESSED BISCUIT HAVING A BEVELED EDGE AND GROOVE FOR INSERTION OF STRAPPING MEANS

Frank J. Horansky, Apollo, and Eric D. Arndt, New Kensington, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed May 3, 1984, Ser. No. 606,936
Int. Cl.[4] B65B *13/02*
U.S. Cl. 100—3 **9 Claims**



1. A method for converting low-density objects into a bale that is suitable for transportation and storage, comprising

(a) providing a chamber having a base wall, a side wall extending outwardly from said base wall, said side wall defining a mouth opening spaced outwardly from said base wall,

(b) inserting a first plurality of low-density objects through said mouth opening and into said chamber,

(c) compressing said low-density objects by applying force to a crusher having a platen provided with a principal surface opposed to said base wall and a protuberance extending inwardly from said principal surface toward said base wall, said protuberance comprising a first lateral portion and a second lateral portion spaced from said first lateral portion, said platen further comprising a first chamfer extending obliquely inwardly and laterally from said principal surface toward said side wall, said platen forming a compressed first biscuit having a density greater than the density of said objects inserted into the chamber in step (b), said platen forming in said first biscuit a first wall including a recessed groove suitable for insertion of a strapping means, said first chamfer forming in said first biscuit a first bevel extending obliquely inwardly and laterally from said first wall toward said side wall, said first biscuit further comprising a second wall spaced inwardly from said first wall and adjacent said base wall of the chamber,

(d) forming a compressed second biscuit by compressing a second plurality of low-density objects,

(e) positioning said first and second biscuits adjacent one another with said second wall adjacent said second biscuit and said first wall spaced from said second biscuit,

(f) inserting a first strapping means into said groove, said first strapping means extending circumferentially around said first and second biscuits, and

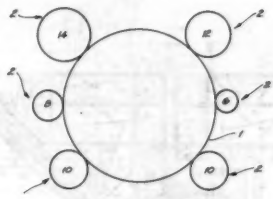
(g) binding said first and second biscuits into a bale by fastening said first strapping means to said biscuits.

4,541,333

ROTARY APPARATUS FOR PRINTING QUASI RANDOM NUMBER TABLES

Ian M. Sillars, 65A Pine Street, Cammeray, New South Wales 2062, Australia

Filed Dec. 10, 1984, Ser. No. 679,863
Claims priority, application Australia, Sep. 17, 1984, PG7178
Int. Cl.[4] B41J *45/00*
U.S. Cl. 101—76 **9 Claims**



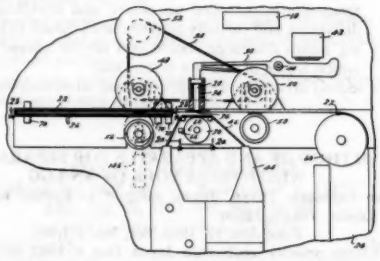
1. Apparatus for printing quasi random number tables (as herein defined) onto newsprint, comprising a flexographic printing press of the type having at least two cylinders arrayed about a central drum, said cylinders including a pair of table printing cylinders having different circumferences, the circumference of each cylinder being a multiple of a basic pitch value, each one of the pair of table printing cylinders being arranged to print a plurality of rows of numbers, the numbers in each row being spaced from one another and interspaced with numbers printed from the other of the pair of table printing cylinders.

4,541,334

MICR PRINTER

Ronald R. Liedtke, Addison; Joseph M. Clark, Elmhurst, and Russell L. Sage, Park Ridge, all of Ill., assignors to MICR Short Systems, Ltd., Madison Hts., Mich.

Filed Oct. 24, 1984, Ser. No. 664,149
Int. Cl.[4] B41J *1/22*
U.S. Cl. 101—93.18 **10 Claims**



1. A document printer comprising:

a print wheel rotatable about an axis and having a plurality

of raised characters disposed at predetermined angular positions about the periphery of said wheel;

electrically actuable print hammer disposed radially of said print wheel and operable between retracted and print wheel impacting positions;

document transport means for supporting said document and for selectively positioning said document between said print wheel and said print hammer;

print wheel stepper motor for rotating said print wheel in incremental angular steps about said axis and having means for positioning a selected one of said raised characters in registrations with said print hammer;

driver means for controlling said print wheel stepper motor including means for determining the number of angular steps required to position said selected one of said characters in registration with said print hammer;

said drive means further including means for generating a plurality of current pulses for driving said print wheel stepper motor said pulses being produced in at least three discrete groups, the period between pulses and the number of pulses in each group being determined in accordance with said number of said incremental angular steps needed to rotate said print wheel to the next character to be printed.

4,541,335

WEB PRINTING APPARATUS WITH PRINTING PLATE CYLINDER AND WEB SPEED CONTROL

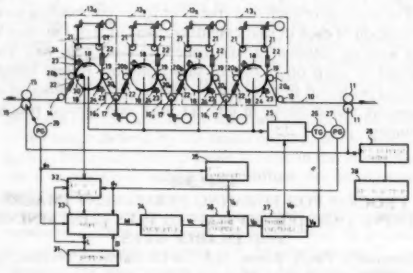
Masateru Tokuno, Nishinomiya; Tetsuya Sawada, Kyoto, and Yasuharu Mori, Amagasaki, all of Japan, assignors to Rengo Co., Ltd., Osaka, Japan

Filed Nov. 28, 1984, Ser. No. 675,975

Claims priority, application Japan, Dec. 9, 1983, 58-233291

Int. Cl.[4] B41F *5/06*

U.S. Cl. 101—181 **2 Claims**



1. A printing apparatus for a running web, comprising:

at least one printing unit having a plate cylinder having a circumference (B) longer than double the printing length (L) and adapted to carry two plates, a pair of impression cylinders mounted on said plate cylinder to press the web against said plates on said plate cylinder in diametrically opposite positions, and means for guiding the web so that the length of the web existing between one contact point (between one of said impression cylinders and said plate cylinder) and the other contact point (between the other of said impression cylinders and said plate cylinder) will be three or more odd number of times as long as the printing length,

first drive means for driving the web,

second drive means for driving said plate cylinders, and

control means for controlling said first or second drive means so that during the period from the print start to the print end, the web speed will be equal to the peripheral speed of the plate cylinder and, from the print end to the next print start, said plate cylinder will move for a distance equal to (B/2−L) while the web moves for a distance equal to the printing length (L).

4,541,336

METHOD AND DEVICE FOR CONTROLLING THE SUPPLY OF INK TO THE INKING UNITS OF A MULTI-COLOR PRINTING PRESS

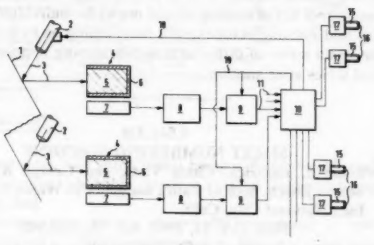
Joachim Bernauer, Frankenthal, Fed. Rep. of Germany, assignor to Albert-Frankenthal AG, Fed. Rep. of Germany

Filed Mar. 30, 1984, Ser. No. 595,212

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1983, 3314333

Int. Cl.[4] B41F *31/00*

U.S. Cl. 101—211 **22 Claims**



1. A method for controlling the rate of supply of printing ink to a printed product passing through a multicolor printing press in separate zones spaced across the width of the press, comprising the steps of:

directing light from a light source to a material printed on the product in at least one zone at a time;

sensing the light reflectance from the material printed on the product in each zone to which light is directed;

converting the sensed light reflectance into a signal having acoustic frequencies dependent on the level of different optical frequency components of the sensed light;

providing a division of the complete acoustic frequency spectrum into a desired member of frequency sub-ranges, and arranging the converted acoustic frequencies into frequency sub-ranges related to the intensity of the ink colors used; and

generating servo signals from the frequency sub-ranges for adjusting the printing ink supply across the width of the press.

4,541,337

PROCESS AND APPARATUS FOR CONTINUOUSLY TREATING A WEB ADAPTED TO PASS THROUGH A COMPUTER PRINTER

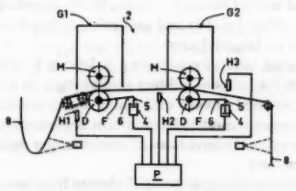
Jean-Paul Schaul, Neuhaeusgen, Luxembourg, assignor to Fraver S.A., Luxembourg, Luxembourg

Filed May 22, 1984, Ser. No. 613,397

Claims priority, application Belgium, May 31, 1983, 210890

Int. Cl.[4] B41F *5/06*

U.S. Cl. 101—227 **5 Claims**



1. Apparatus for feeding and continuously printing on a

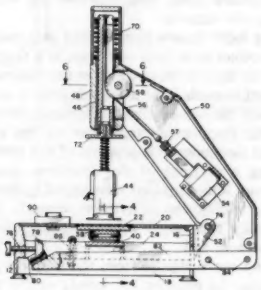
flexible deformable strip so as to produce a printed strip having thereon a plurality of repeating series of impressions, each series of impressions comprising a plurality of successive but non-overlapping different impressions each of which, when subsequently severed from the others, will comprise a sheet different from at least one contiguous sheet in the series, comprising a computer printer, means for passing the strip through the computer printer so as to mark on the strip a series of marks having the spacing of the different impressions subsequently to be printed on the strip, a plurality of printing stations through which the strip passes sequentially, said stations being each adapted to print a different impression on the strip, means individual to each said station for reading the marks placed on the strip by the computer printer, each said individual reading means reading said marks to determine whether its associated said printing station is or is not to be actuated, and means responsive to the reading of said marks for individually actuating said printing stations with such timing as to print on the strip said series of different non-overlapping impressions, one said series after another.

4,541,338

SHEET NUMBERING MACHINE

William J. Laverick, Chula Vista, and George A. Kendall, Solana Beach, both of Calif., assignors to Wizer, Equipment, Inc., National City, Calif.

Filed Oct. 14, 1983, Ser. No. 541,999
Int. Cl.⁴ B41F *1/06*
U.S. Cl. 101—316 **4 Claims**



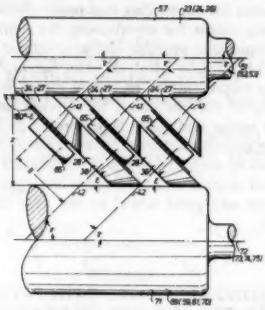
1. A character imprinting machine comprising:
a base,
a platen mounted on said base for supporting a sheet of paper to be imprinted,
a support arm secured to said base at one side of said platen and extending to a position above said platen,
a reciprocating plunger pivotally mounted on and supported by said arm above said platen and reciprocable toward and away from said platen,
a printing head mounted on said plunger for engaging and imprinting a character on a sheet supported by said platen,
first and second means for respectively adjusting the relative slope of said platen and said printing head to one another about orthogonal axes,
said second means for adjusting is defined by releasable latch means for reliably holding said plunger in a vertical position oriented toward said platen and comprises screw and nut means mounted on said arm for selectively adjusting the vertical orientation of said plunger relative to said platen, and
solenoid power means located remote from said plunger and comprising cable and pulley means including resilient link means connecting said solenoid to said plunger.

4,541,339

INKING UNIT

Claus D. Barrois, Wurzburg, Fed. Rep. of Germany, assignor to Koenig & Bauer Aktiengesellschaft, Wurzbug, Fed. Rep. of Germany

Division of Ser. No. 366,263, Apr. 7, 1982, Pat. No. 4,519,312. This application Mar. 18, 1985, Ser. No. 712,500
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1981, 3127880
Int. Cl.⁴ B41F *31/26, 31/10*
U.S. Cl. 101—349 **2 Claims**



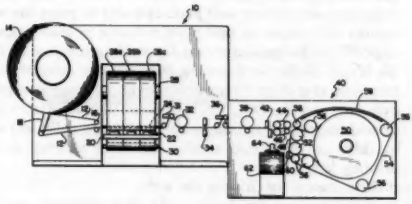
1. A liquid transport mechanism for distributing a liquid medium evenly on the surfaces of first and second rotatable cylinders bearing said liquid medium; said liquid transport mechanism comprising a plurality of cooperating pairs of rotatably supported transport rollers, surface portions of said rollers in each said pair contacting each other, a surface portion of one of said rollers of each pair of said transport rollers being in contact with said surface of one of said cylinders, an axis of rotation of each said transport roller intersecting an axis of rotation of each of said cylinders at an angle of less than 90°, and axes of rotation of said rollers in each said pair being parallel to each other one of said transport rollers being in contact with said first rotatable cylinder and the other of said transport rollers being in contact with said second rotatable cylinder.

4,541,340

PROCESS FOR FORMING PERMANENT IMAGES USING CARRIER SUPPORTED INKS CONTAINING SUBLIMABLE DYES

Whitcomb S. Peart, Keene, and Jon O. Baldvins, Nashua, both of N.H., assignors to Markem Corporation, Keene, N.H.

Continuation of Ser. No. 394,877, Jul. 2, 1982, abandoned. This application Aug. 28, 1984, Ser. No. 644,668
Int. Cl.⁴ B41M *5/02*
U.S. Cl. 101—470 **29 Claims**



1. A process for forming a permanent, abrasion and chemical resistant image on a fabric or plastic substrate comprising:
(a) providing a printing matrix having raised portions in the shape of the image to be printed on the substrate,

(b) providing a carrier supported ink comprising
(1) a uniform coating of an ink composition comprising
(i) from about 2 to about 91 percent by weight of a sublimable dye,
(ii) from about 2 to about 67 percent by weight of a resin, and
(iii) from about 4 to about 45 percent by weight of a wax,
wherein the dye, resin and wax and the amounts thereof are selected so that the ink composition forms a discontinuous film on the carrier surface that will fracture along the edges of the areas where the matrix contacts the carrier sheet and that will completely release from the carrier sheet within the fracture lines in the shape of the image defined by the raised portions of the printing matrix,
(2) a carrier sheet for supporting said coating on one surface thereof, said carrier sheet comprising a material
(i) which is compatible with said ink composition, and
(ii) which has a thickness and deformability which permits the carrier sheet to conform to the raised portions on the printing matrix by stretching the carrier sheet over the raised portions and which further permits the pressure applied to the uncoated side of the carrier sheet to cause the ink composition to completely release from the carrier sheet in the shape of the image defined by the raised portions of the printing matrix,
wherein said carrier sheet is selected from the group consisting of polyethylene, polypropylene, polyester, polyamide and cellophane films, and has a thickness of from about 0.25 mil to about 2.5 mils,
(c) disposing the carrier supported ink adjacent to the printing matrix such that the uncoated surface of the carrier sheet faces the printing matrix,
(d) providing a fabric or plastic film substrate having a surface through which said sublimable dye can diffuse,
(e) disposing the substrate such that the surface thereof faces the coated surface of the carrier sheet,
(f) applying pressure between said printing matrix and said substrate to cause the printing matrix to contact the uncoated surface of the carrier sheet and to cause the coated surface of the carrier sheet to contact the substrate surface, said pressure being applied under conditions sufficient to cause the ink composition to completely transfer from the carrier sheet to the substrate surface in the shape of the image defined by the raised portions of the printing matrix, but insufficient to cause the dye in the ink composition to sublime or vaporize and diffuse into the substrate surface,
(g) removing the carrier sheet from contact with the printed substrate surface following the application of pressure between the printing matrix and the substrate, and
(h) heating the ink composition which has been transferred to the substrate surface, said heating occurring under conditions of temperature, pressure and time sufficient to cause the dye therein to sublime or vaporize and diffuse into the substrate surface.

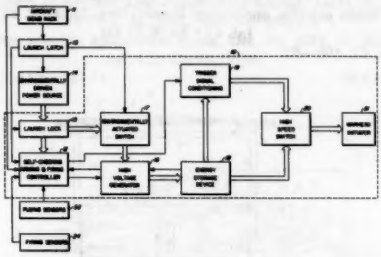
4,541,341

SELF-CHECKING ARMING AND FIRING CONTROLLER

Steven E. Fowler; George N. Hennings, and James V. McVay, all of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 28, 1983, Ser. No. 546,630
Int. Cl.⁴ F42C *15/40*
U.S. Cl. 102—215 **11 Claims**

1. An electronic arming and firing controller for use in a munition fuze, where said fuze includes an electrically fired warhead detonator and a chargeable electrical energy storage device, and where a firing sensor external to said fuze provides a signal to initiate the detonation of said munition, comprising:
timed signal generating means, the mode of operation and timing of operation of said signal generating means predetermined by inputs selected by the user of said munition prior to employment of said munition, for monitoring the state of electrical charge of said energy storage device and for producing a first, a second and a third signal, said first signal being a high voltage enabling signal, said high voltage enabling signal being a first prerequisite before said energy storage device can be charged, said second signal being a drive signal, said drive signal being a second prerequisite before said energy storage device can be



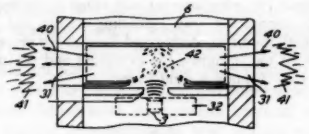
charged, and, said third signal being a firing signal, said firing signal produced in response to input from said firing sensor; and
self-checking logic means, electrically connected to said timed signal generating means and including a pulse producing clock operating at a predetermined frequency, for providing verification of the proper operation of said controller, said self-checking logic means originating said high voltage enabling signal and routing said high voltage enabling signal to said timed signal generating means.

4,541,342

PYROTECHNIC DEVICE WITH METAL DIAPHRAGM AND METAL INSERT

Peter Routledge, Lightwater, England, assignor to EMI Limited, Hayes, England

Continuation of Ser. No. 261,884, May 8, 1981, abandoned. This application Dec. 5, 1984, Ser. No. 679,082
Claims priority, application United Kingdom, May 9, 1980, 8015346
Int. Cl.⁴ F42B *1/02*
U.S. Cl. 102—308 **6 Claims**



1. A pyrotechnic device comprising:
a container,
a body of a pyrotechnic composition within the container,
a first metal plate positioned adjacent to a surface of said body,
a second metal plate, having an aperture therein, positioned adjacent to an opposite surface of said body,
a high explosive detonator positioned within the container on the side of said aperture remote from said pyrotechnic composition,
and a metal diaphragm interposed between the composition and the high explosive detonator so as to cover the aperture,
whereby, in use, said metal diaphragm modifies a detonation wave produced by said high explosive detonator and disintegrates locally, at least some of the particulate mate-

rial produced as a result of disintegration being reflected by said first plate, and said pyrotechnic composition is caused to detonate.

4,541,343

ADJUSTABLE TELEVISION/VIDEO RECORDER STAND INCORPORATING A CASSETTE-HOLDER

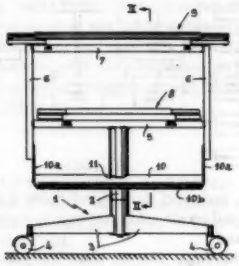
Henri Erard, 26 Rue du Gambaud, Tignieu-FR 38230 Pont de Cheruy, France

Filed Oct. 19, 1983, Ser. No. 543,544

Claims priority, application France, Oct. 22, 1982, 82 18037

Int. Cl.[4] A47B *81/06*

U.S. Cl. 108—92 **2 Claims**



1. A stand having adjustable shelves for supporting a television set and a video recorder and having a tray for supporting cassettes, comprising:

an underframe comprising a vertically disposed tube having an upper end and having a lower end carrying multiple radially extending arms for supporting the underframe on the ground;

a first horizontal crossbar fixed across the underframe at said upper end of the tube;

two laterally spaced uprights fixed to said first crossbar at its ends and disposed parallel with said tube substantially in a common vertical plane therewith, the uprights respectively having upper and lower ends disposed above and below said first crossbar;

a second horizontal crossbar fixed at its ends to the upper ends of said uprights;

vertically spaced shelf means respectively carried by said first and second crossbars and respectively adjustable to support the television set and video recorder; and a cassette supporting tray extending across the underframe beneath the first crossbar and fixed to the respective lower ends of the uprights, the crossbars and the uprights and the tray forming a rigid frame.

4,541,344

CANTILEVER SHELVING RACK

Max Nichols, Montgomery, Ill., assignor to Aurora Equipment Company, Aurora, Ill.

Filed Sep. 27, 1982, Ser. No. 422,882

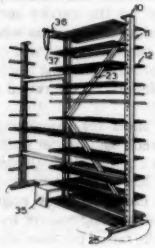
Int. Cl.[4] A47F *5/10*

U.S. Cl. 108—108 **13 Claims**

1. In a storage rack, the improvement comprising a series of columns for supporting shelves with each column having slot means at vertically spaced intervals corresponding to locations for supporting shelves, the slot means on one column being horizontally aligned with the slot means on the column adjacent thereto,

each column having angularly disposed upright column sides on each side of the associated column diverging in a direction away from the column, and a support bracket having diverging upright bracket sides for snug engagement with the column sides, the brackets further having parallel terminal bracket legs carrying said slot means, and with the load of the associated shelf being carried through the shelf supports and the bracket to the associated column,

shelf supports each supported by said slot means on said columns with each of the supports extending horizontally across the columns both forwardly and rearwardly of said columns thereby supporting shelves on opposite sides of the columns,



fastener means fixedly locking said shelf supports in a fixed position relative to said columns,

shelves mounted at opposite ends on said shelf supports on opposite sides of said columns with the columns being positioned centrally of the shelves as opposed to an outside location insuring maximum available shelf space with unimpaired access to the shelves, and

shelf fastener means securing said shelves in fixed unitary assembly relative to said shelf supports.

4,541,345

APPARATUS FOR RECOVERING ENERGY FROM PYROLYZABLE, CARBONACEOUS WASTE MATERIALS OF VARYING COMPOSITION

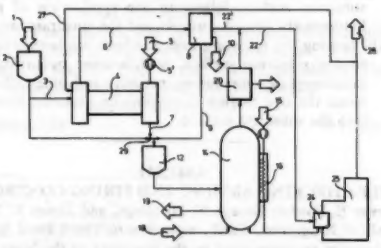
Heinrich Grumpelt, and Johannes Jaroch, both of Bad Bentheim, Fed. Rep. of Germany, assignors to C. Deilmann AG, Bad Bentheim, Fed. Rep. of Germany

Filed Mar. 20, 1984, Ser. No. 591,446

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1983, 3310534

Int. Cl.[4] F23D *1/00*

U.S. Cl. 110—229 **10 Claims**



1. Apparatus for recovering energy from pyrolyzable, carbonaceous waste materials of varying composition, comprising:

at least one rotary tube reactor having means to receive the waste materials and means for producing as products, a low temperature carbonization gas and a pyrolytic coke at a reaction temperature of above 200° C., said reactor further including means to discharge said carbonization gas and means to discharge said coke;

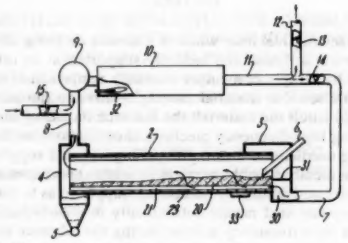
means to clean the carbonization gas, said means being con-

nected subsequent to the rotary tube reactor; combustion means to combust the cleaned carbonization gas exiting from said cleaning means; a fluidized bed or swirling layer gasifier which has supplied thereto an oxygen-containing gasifying agent, the pyrolytic coke, and, optionally, waste materials, and from which exit a hot gas, having a temperature of between 400° and 1000° to be used for combustion in said combustion means, and an inert ash; and a separate cleaning or purification stage for the hot gas from the fluidized bed or swirling layer gasifier.

4,541,346
ROTARY HIGH TEMPERATURE REACTOR

Michael D. Culliford, Retford, England, assignor to N. D. Engineering Limited, Doncaster, England

Filed Nov. 15, 1983, Ser. No. 551,924
Claims priority, application United Kingdom, Nov. 16, 1982, 8232627
Int. Cl.⁴ F23G 5/06; F27B 7/36
U.S. Cl. 110—246 **7 Claims**



1. In a rotary high temperature reactor comprising a rotary drum of heat resistant material mounted for rotation about a substantially horizontal axis, said drum comprising a peripheral shell and a plurality of vanes extending longitudinally of and within said shell to define passages closed at their radially outer side by the shell and open at their radially inner side; means for rotating the drum; means for feeding solid combustible material to be treated into one end of the drum; means for collecting treated solid material from the other end of the drum, the drum being adapted, upon rotation, to feed solid material from the inlet to the outlet end thereof; and means for supplying gas for treatment of the solid material into the ends of the passages defined between the vanes, such gas supplying means being adapted to supply the gas only into those passages which at that particular time, during use of the reactor, are covered by said material being tumbled in the drum, the improvement comprising:

(a) the gas supply means being adapted to supply hot gas to the drum and through the solid material, the gas having insufficient air to complete the combustion of solid materials in the drum but having a temperature sufficient to liberate combustible gases from the solid material, the combustible gases being given off from the outlet end of the drum during use of the reactor;

(b) burner means for supplying hot gas to said gas supply means, and valve means for supplying part only of the hot gas from the burner to the gas supply means;

(c) conveying means for conveying the combustible gases from the drum to said burner means;

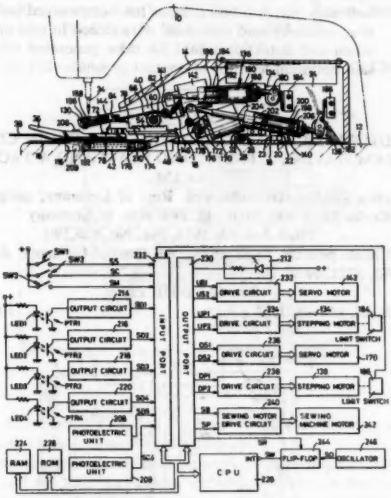
(d) means for supplying additional air to the combustible gases given off from the outlet end of the drum and for feeding the resulting air-combustible gas mixture to said burner means to complete the combustion thereof and to provide hot gas for the gas supply means; and

(e) the vanes within the shell of the drum each having a flange at their inner end, said flanges extending in a substantially circumferential direction opposite to the direction of rotation of the drum to resist the entry into the passages between the vanes of solid material being treated in the drum, each flange substantially overlapping an immediately adjacent vane to define circumferentially directed gas outlet slits between the edges of the flanges and the vanes overlapped thereby.

4,541,347
AUTOMATIC WORK GUIDING APPARATUS FOR SEWING MACHINES

Hideo Kawaguchi, and Etuzo Nomura, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Nov. 24, 1982, Ser. No. 444,071
Claims priority, application Japan, Dec. 16, 1981, 56-203230
Int. Cl.⁴ D05B 19/00
U.S. Cl. 112—121.11 **10 Claims**



1. In a fabric-guiding apparatus for guiding a fabric layer in a direction intersecting a line of fabric feed in a sewing machine having a seam forming mechanism and a fabric feeding mechanism for sewing along a side edge of said fabric layer, including (a) a detector member disposed ahead of said seam forming mechanism in a direction of said line of fabric feed, including a detector element sensing said side edge of the fabric layer and generating a detection signal indicative of the sensing of said side edge, (b) a guiding wheel rotatable about an axis parallel to said line of fabric feed and engageable with the surface of said fabric layer, (c) pressure exerting means for exerting a contact pressure urging said guiding wheel into engagement with the surface of said fabric layer, and (d) first drive means, operative in response to said detection signal from said detector member, for rotating said guiding wheel selectively in forward and reverse directions for moving said side edge of the fabric layer on said detector element laterally with respect to said line of fabric feed, said pressure exerting means comprising:

a pressure adjusting mechanism to adjust said contact pressure;

second drive means to actuate said pressure adjusting mechanism;

a drive circuit connected to said second drive means and operative in response to command signals;

a memory for storing command data relating to said command signals and representative of said contact pressure; and

control means for automatically establishing an optimum

level of said contact pressure, said control means (a) supplying to said drive circuit a predetermined number of said command signals for changing said contact pressure in steps of a predetermined amount prior to a normal operation of the fabric-guiding apparatus during formation of a seam by said seam forming and fabric feed mechanism, (b) outputting a rotation signal to operate said first drive means for laterally moving said fabric layer when each of said predetermined number of command signals is supplied to said drive circuit, (c) checking according to said detection signal from said detector element whether or not said fabric layer has been moved into position by said guiding wheel, (d) updating said command data each time said predetermined number of command signals have been supplied to said drive circuit, and (e) stopping the updating of said command data when said detection signal indicates that said fabric layer has been moved into position, whereby said command data stored in said memory when said detection signal has been generated relates to said optimum level of of contact pressure.

4,541,348

AUTOMATIC SEWING MACHINE FOR PRODUCING A SEAM HAVING A FASTENING SEAM AND A TACKING SEAM

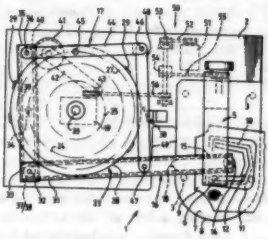
Jochen Fischer, Detmold, Fed. Rep. of Germany, assignor to Kochs Adler AG, Bielefeld, Fed. Rep. of Germany

Filed Jun. 13, 1984, Ser. No. 620,190

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1983, 3321789

Int. Cl.[4] D05B *21/00*

U.S. Cl. 112—121.12 **7 Claims**



1. An automatic sewing machine for producing a seam having a fastening seam and a tacking seam, said machine comprising a sewing head including a bearing bracket oscillating in one plane, a reciprocating needle bar mounted in said bearing bracket and carrying a needle and drive means imparting to said needle bar controllable lateral oscillating movements, the oscillating movement and the needle movement having a transmission ratio of 1:n (with n=2, 3 or 4) and which can be selectively engaged with a control drive of the bearing bracket, an oscillating movement also being produced during the production of the fastening seam, the oscillating movement and the needle movement having a transmission ratio of 1:1; means for receiving and clamping a workpiece; a guiding device for producing a continuous relative movement between the sewing head and a workpiece held by said clamping means in accordance with a predetermined seam course, the guiding device producing the relative movement in the oscillating plane of the bearing bracket during the production of the fastening seam; a first bearing mounting said needle bar in said bearing bracket and being drivable in the transmission ratio 1:n by means of a first drive mechanism and a second bearing mounting said needle bar in said bearing bracket and being drivable in the transmission ratio 1:1 by means of a second drive mechanism, said two bearings being arranged to be oscillatingly driven independent of one another and each drive mechanism being engageable independently of the other.

4,541,349

SEWING METHOD AND MACHINE

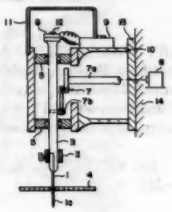
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Kanagawaken, Japan

Filed Dec. 27, 1982, Ser. No. 453,175

Claims priority, application Japan, Dec. 24, 1981, 56-195862[U]

Int. Cl.[4] D05B *55/14*

U.S. Cl. 112—221 **10 Claims**



6. A sewing machine wherein a needle carrying at its one end portion a thread and securely supported at its other end portion by a support member is axially reciprocated into and through a sewable material moving relative to the axis of the needle to stitch the material, the machine including means for imparting high-frequency mechanical oscillations to the reciprocating needle, said means comprising a power supply, and a vibratile member firmly secured to said support member and oscillatory activatable by said power supply so as to longitudinally oscillate said needle substantially in a direction of said axis at a high-frequency at least during the advance stroke of each cycle of the needle reciprocation, thereby facilitating the penetration of the needle into and through said sewable material.

4,541,350

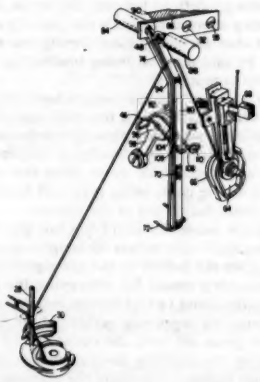
THREAD RETAINING CLOTH STRIP FOR LOCKSTITCH SEWING MACHINES

Stanley J. Ketterer, Jamesburg, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Nov. 5, 1984, Ser. No. 667,946

Int. Cl.[4] D05B *47/02, 49/02*

U.S. Cl. 112—254 **5 Claims**



1. In a sewing machine wherein a sewing needle and looptaker cooperate in the formation of locked stitches in a fabric, the combination comprising: a thread source; thread tensioning means to which thread extends from the thread source; a thread handling device into which the thread extends from the

tensioning means and beyond which the thread extends to the needle; and a takeup for setting stitches and pulling thread through the tensioning device from the thread source, the takeup being movable in one direction with thread to a stitch setting position at one end of its operating range whereat the thread is disposed for temporary retention by said device, and movable in the opposite direction free of the thread to the other end of said operating range to permit thread to move in the thread handling device away from the temporary retention position to a position of reengagement with the takeup at said other end of its operating range, and during such movement shorten the path for thread between the tensioning device and needle to supply a quantity of thread for use by the needle and looptaker; said thread handling device including a single elongate cloth strip folded lengthwise upon itself to provide opposing front and rear segments of said single cloth strip that receive and frictionally engage the thread therebetween to impose restraint upon the descent thereof when the takeup is moved in said opposite direction and so provide for said temporary retention of the thread in the device.

4,541,351

METHOD AND APPARATUS FOR AUTOMATIC POSITIONING OF OPEN ENDS OF STOCKINGS FOR FORMING INTO PANTYHOSE

Teruyuki Horita, Kitakatsuragi, and Keiji Kawamura, Yamatotakada, both of Japan, assignors to Takatori Machinery Mfg. Co., Ltd. and Kawamura Textile Co., Ltd., both of Yamatotakada, Japan

Filed May 18, 1984, Ser. No. 612,027
Claims priority, application Japan, May 26, 1983, 58-93487
Int. Cl.[4] D05B *21/00, 97/00*
U.S. Cl. 112—262.2 **2 Claims**

1. A method of automatically positioning stocking ends, which comprises mounting a pair of stockings on upper and lower template assemblies of a template unit and thereafter detecting the end of one of the stockings so mounted by means of one phototube A of a pair of phototubes disposed at upper and lower locations, bringing positioning plates into contact with the end of the other stocking upon said detection, causing the other phototube B to detect the presence or non-presence of the other stocking at the time of the detection of said one stocking by said one phototube A, moving the end of the other stocking, if the end is detected by said other phototube B, over a preset distance toward the front end of the template assembly, then moving said stocking end toward the base end of the template assembly and to the detecting position of the other phototube B, and conversely, if the other stocking end is not detected by said other phototube B, moving said one stocking end toward the base end of the template assembly by means of the positioning plates, and disengaging said positioning plates from the end of said other stocking at the time when the end of said other stocking is detected by said other phototube B.

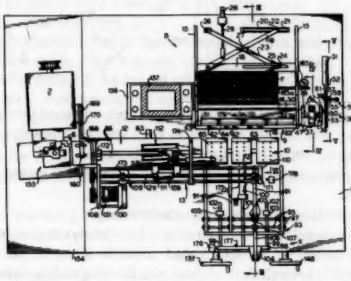
2. An apparatus for automatically positioning the ends of a pair of stockings, comprising: a template unit having upper and lower template assemblies; a pedestal; means for moving said pedestal back and forth in the longitudinal direction of the upper and lower template assemblies; at least two phototubes A and B disposed on said pedestal for optically detecting the ends of a pair of stockings mounted on said upper and lower templates; a slider disposed on said pedestal; means for moving said slider back and forth in the same direction as said pedestal and independently of said pedestal; and positioning plates mounted on said slider and being selectively engageable with the end of a stocking mounted on one of said template assemblies of said template unit, for positioning said stocking with respect to the other of said pair of stockings in response to a signal from one of said phototubes, and disengageable therefrom in response to a signal from the other of said phototubes.

4,541,352

METHOD OF AND APPARATUS FOR ATTACHING FLY STRIPS TO A SLIDE FASTENER CHAIN

Ronald J. Boser, Dix Hills, N.Y., and Michael T. Martin, Gainsville, Ga., assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Jun. 8, 1983, Ser. No. 502,310
Int. Cl.[4] D05B *3/12*
U.S. Cl. 112—265.2 **17 Claims**



1. A method of sewing fly strips onto a continuous slide fastener chain, comprising the steps of:

passing a continuous slide fastener chain through a gapping unit for forming fastener element-free gaps in said chain between predetermined ungapped lengths therealong,

delivering said gapped continuous slide fastener chain from said gapping unit to a sewing station defined by a sewing machine,

successively feeding fly strips from a stack along a feed path to said sewing station,

detecting the gaps in said chain to trigger the start of each successive feeding step, and

advancing respective fly strips and chain lengths through said sewing station for sewing said flystrips onto said chain.

4,541,353

DUAL-CHAIN SEWING MACHINE

Elbert Engle, Ashville, Ala., assignor to Chesebrough-Pond's, Inc., Conn.

Filed Jan. 9, 1984, Ser. No. 569,049
Int. Cl.[4] D05B *27/00, 21/00;* B65G *25/00;* B65H *39/00*
U.S. Cl. 112—304 **11 Claims**

1. Apparatus for sewing first and second fabric plies along first and second seam tracks on said plies, comprising:

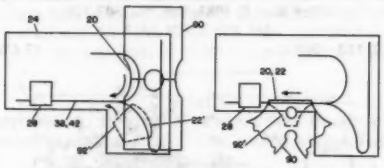
a first flexible, elongated carrier mounted and arranged for motion around a first continuous path, said first carrier having pins projecting from at least a portion thereof in a first transverse direction, said first path having a first path segment corresponding to said first seam track and a second path segment;

a second flexible, elongated carrier mounted and arranged for motion around a second continuous path, said second path having a third path segment corresponding to said second seam track and a fourth path segment generally

parallel to and along said second path segment, said second carrier having pins projecting from at least a portion thereof in a second transverse direction, said second transverse direction being substantially opposite to said first transverse direction and toward said first carrier when said pin bearing portions of said first and second carriers are at said second and fourth segments of said paths, respectively;

fabric applying means, associated with said first and second carriers, for applying said fabric plies along said first and second seam tracks to said pin bearing portions of said first and second carriers when said pin bearing portions are along said first and third path segments, respectively;

carrier transport means for transporting said first and second carriers with substantially identical linear speed;



fabric guiding means for mating said pin engaged fabric plies along said second and fourth path segments in response to transport of said first and second carriers; and

sewing apparatus for receiving and sewing said mated fabric plies.

8. Fabric handling apparatus comprising:

a first elongated carrier having transversely extending pins and arranged for elongated motion along a first path serially through first and second fabric guiding slots with said pins extending into said first and second slots and a second elongated carrier having transversely extending pins and arranged for elongated motion along a second path serially through a third fabric guiding slot and said second fabric guiding slot with said pins extending into said third slot and into said second slot toward said pins of said first carrier.

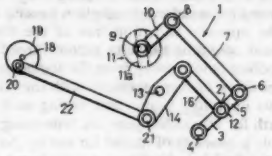
4,541,354

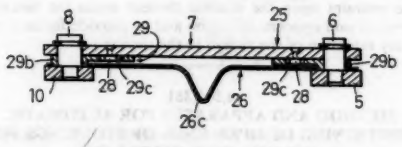
FEED REFERENCE POINT BALANCING DEVICE OF SEWING MACHINE

Hideaki Takenoya, Hachioji, and Kazunori Honda, Kokubunji, both of Japan, assignors to Janome Sewing Machine Industry Co., Ltd., Japan

Filed Mar. 30, 1984, Ser. No. 595,143
Int. Cl.⁴ D05B *27/22*
U.S. Cl. 112—314 **3 Claims**

1. Device used in combination with a sewing machine having a feed control mechanism including a feed regulator and first and second transmission links operatively connected to said feed regulator, each of said first and second transmission links having both ends each connected to an adjacent element by a pivot axis and being operated to change an angular position of said feed regulator to adjust a fabric feeding amount, the improvement of which comprises first and second elastic means each connected between said two axes at both ends of each of said transmission links to normally bias said pivot axes toward each other so as to automatically balance the angular position of said feed regulator at the time of the feed amount





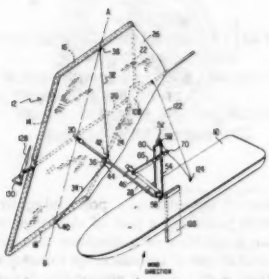
being zero, whereby a feed reference point of said feed control mechanism may be maintained at a predetermined position.

4,541,355

SAIL RIGGING

James B. Denton, 4009 Whispering La., Annandale, Va. 22003

Continuation-in-part of Ser. No. 457,947, Jan. 14, 1983, abandoned. This application Dec. 26, 1984, Ser. No. 686,533
Int. Cl.⁴ B63H *9/06*
U.S. Cl. 114—39 **11 Claims**



1. Sailing apparatus comprising:

a hull;

a vertical mast connected to and extending upwardly from said hull;

a tubular member concentric with and rotatable about the axis of said mast;

a boom;

an auxiliary boom connected at its lower end to said tubular member for pivotal movement about a horizontal axis;

first connecting means joining said boom and said auxiliary boom in parallel relation;

a sail assembly including a frame and a fabric cover;

second connecting means joining the upper end of said boom to said sail assembly and permitting pivotal movement of said sail assembly relative to said boom; and

means connected to said mast and said auxiliary boom for controllably positioning said auxiliary boom, said boom carried thereby and said sail assembly, said lastmentioned means including a control bar attached to said auxiliary

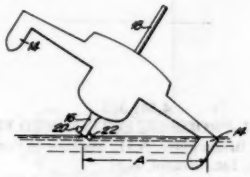
boom adjacent the upper end thereof, extending generally horizontally past said mast when in its operative position, and adjustably connected to said mast.

4,541,356

MULTIHULL VESSEL WITH CAPSIZE PREVENTION MEANS

Tristan Jones, 9 Bow St., London WCZE7AL, England, and Leo Surtees, 73 Garden St., Tamworth, New South Wales, 2340, Australia

Filed May 18, 1984, Ser. No. 611,715
Int. Cl.⁴ B63B *43/06*
U.S. Cl. 114—61 **8 Claims**



1. A capsize prevention device for a multihull vessel having a keel, said device comprising:

first and second tube means disposed longitudinally along opposed sides of the keel;

valve means disposed at each end of said first and second tubes, said valve means being displaceable between a first open position and a second closed position, said valve means when in said first open position being effective to permit water to flow through said tubes, and when in said second closed position to retain water therein; and

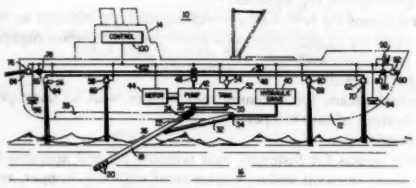
means responsive to the relative heel angle of the keel for displacing said valves from said first position to said second position.

4,541,357

WATERCRAFT HAVING WATER JET LIFT

Austin N. Stanton, 3017 Stonehenge La., Carrollton, Tex. 75006

Filed Oct. 11, 1983, Ser. No. 540,861
Int. Cl.⁴ B63H *11/04*; B64C *29/00*
U.S. Cl. 114—67 R **24 Claims**



12. A watercraft comprising:

a hull;

a power source;

a drogue supported by said hull, said drogue for transmitting water therethrough from a body of water below said hull;

a pump mounted on said drogue and driven by said power source, said pump for driving said water through said drogue;

a plurality of nozzles mounted to said hull and connected to receive pressurized water from said pump through said drogue for producing downwardly directed water jets to cause reaction forces for lifting said hull above said body of water; and

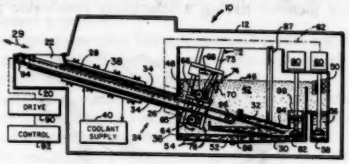
a tank for storing water received from said drogue.

4,541,358

METHOD AND APPARATUS FOR SOLDER REMOVAL

Donald J. Spigarelli, Carlisle; Douglas J. Peck, North Andover; Walter J. Hall, New Corner, and James L. Finney, Hudson, all of Mass., assignors to The HTC Corporation, Concord, Mass.

Filed Nov. 28, 1983, Ser. No. 555,715
Int. Cl.⁴ H05K *3/24*
U.S. Cl. 118—58 **20 Claims**



1. A solder leveling system for use in vapor phase soldering of a workpiece having through holes comprising:

a vapor chamber:

a near-horizontal throat communicating with said chamber;

means for generating a vapor within said chamber;

means for limiting the height of the vapor within said chamber to a level below the opening of said throat;

a solder pot within said chamber having an opening in line with said throat;

means for transporting said workpiece along a near-horizontal path through said throat into and out of said solder pot; and

means including nozzles positioned in said chamber astride said path between said throat and said solder pot for directing streams of liquid against opposing sides of said workpiece as said workpiece is transported from said solder pot to said throat.

4,541,359

DEGRADABLE LITTER COVERING FOR USE IN THE BROODING AREA OF POULTRY HOUSES

David J. Hickey, Greensboro, N.C., and Kieran Devery, Columbus, Ind., assignors to Kieffer Paper Mills, Inc., Brownstown, Ind.

Filed Oct. 19, 1983, Ser. No. 543,335
Int. Cl.⁴ A01K *1/015*
U.S. Cl. 119—1 **23 Claims**

1. In a poultry house, the improvement comprising as a litter covering to extend the useful life of litter in said poultry house, and improve health and sanitation therein, one or more sheets of paper placed to form a continuous flat sheet-like barrier over any existing litter in at least the comfort zone portion of the brooding area of said brooding house so as to effect initial separation between the poultry and the litter, said litter covering being designed and constructed to gradually degrade into litter over a predetermined time period which is less than the brooding and grow out period of poultry within said brooding house.

4,541,360

DISPOSABLE ANIMAL LITTER BOX

Queenie D. Higgins, and Dana R. Garrison, both of 1221 SW. 92, Oklahoma City, Okla. 73139

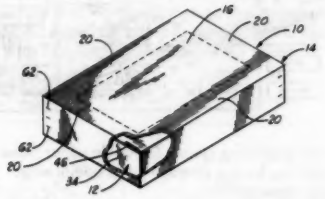
Filed Mar. 5, 1984, Ser. No. 586,106
Int. Cl.⁴ A01K *23/00*
U.S. Cl. 119—1 **9 Claims**

1. A disposable animal litter box fabricated as a unitary component and having its internal surface treated with a urine repellant material, the disposable animal litter box comprising:

a substantially fluid-tight bottom container having a bottom panel, substantially parallel container end walls connected to two opposite edges of the bottom panel so as to be

substantially normally disposed to the plane of the bottom panel, substantially parallel container side walls connected to the other two opposite edges of the bottom panel so as to be substantially normally disposed to the plane of the bottom panel, the container side walls extending from the bottom panel in the same direction as the container end walls, and foldable corners interconnecting the end portions of the container end walls with adjacently disposed end portions of the container side walls;

a cover member supported by the bottom container, the cover member having a selectively removable portion



formed therein for defining an opening and providing an animal supporting lip in the cover member encompassing the opening, the removable portion being repositionable with the opening for frictionally engaging the lip of the cover member defining the opening for disposal of the animal litter box and its contents; and

connecting means for connecting the foldable corners of the bottom container to the bottom container end walls and the cover member, the foldable corners forming an internal support for the lip of the cover member such that the lip is capable of supporting the weight of an animal thereon.

4,541,361

METHOD AND APPARATUS FOR AUTOMATICALLY FEEDING GREAT NUMBERS OF ANIMALS, ESPECIALLY PIGS

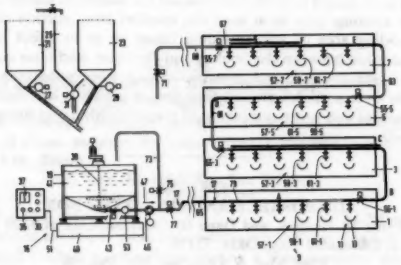
Walter Hölter, Ollener Moor, Fed. Rep. of Germany, assignor to Lohmann Apparatebau GmbH, Cuxhaven, Fed. Rep. of Germany

Filed Apr. 2, 1984, Ser. No. 595,600

Claims priority, application Fed. Rep. of Germany, May 9, 1983, 3316916

Int. Cl.⁴ A01K *5/02*

U.S. Cl. 119—51 R **12 Claims**



1. A method of automatically feeding animals, especially pigs, in which a predetermined stream of a pumpable feed pulp is conveyed via a pipeline from a preparation zone to a feeding zone remote therefrom, the cross-sectional area of said pipeline being dimensioned corresponding to a power demand for the conveying in view of the consistency of the feed pulp and the feed requirement to be met when the feeding zone is occupied by grown up animals, with the feeding times and amounts of feed being preferably predetermined automatically, characterized in that for feeding with the feed requirement reduced or the feed composition changed, especially when feeding young animals which are perhaps present only in selected portions of the feeding zone, a feed pulp strand of limited length is conveyed through the pipeline to at least one dispensing station in the feeding zone by means of a filling liquid introduced into the pipeline, which is unobjectionable from a nourishing physiological viewpoint, and in that the length of the strand is dimensioned to be such that said strand is fed within a time interval sufficiently short to keep it fresh.

4,541,362

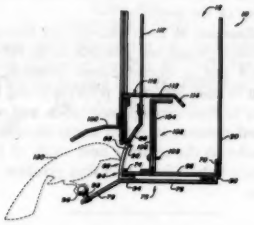
SQUIRREL-PROOF SELECTIVE BIRD FEEDER

Allan W. Dehls, Bridgewater, N.H., assignor to Profile Management Services, Inc., Bristol, N.H.

Filed Oct. 27, 1983, Ser. No. 545,970

Int. Cl.⁴ A01K *5/00*

U.S. Cl. 119—51 R **24 Claims**



1. A squirrel-proof selective bird feeder comprising:

an integral gnaw-proof hopper having a rectangular cross section, an open top, an open bottom, a window receiving aperture, and an internal volume for containing a large quantity of bird feed;

a gnaw-proof top member;

first means for removably mounting said top member to the open top of the hopper in a water-resistant sealing engagement therewith;

a bottom wall;

second means for fastening said bottom wall to said open bottom of said hopper;

a window;

third means for fastening said window to said aperture in water-resistant sealing engagement with said hopper, and for providing a feed portal defining a plane proximate said bottom wall of said hopper in internal communication with said internal volume;

a perch having a gate;

fourth means for pivotally mounted said perch at said bottom of said hopper with said gate extending from said perch through said feed portal and into said internal volume of said hopper for rotation between a first position where said gate is inside said hopper and in an open state providing access to said feed portal, and a second position where said gate is substantially coincident with the plane of said feed portal and in a closed state denying access to said feed portal; and

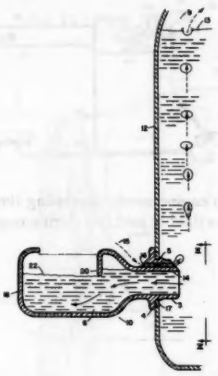
fifth means coupled to said perch for biasing said gate to said open condition.

4,541,363

LIQUID DISPENSING APPARATUS

John A. Paoluccio, 3530 Kiernan Ave., Modesto, Calif. 95356

Filed May 21, 1984, Ser. No. 612,260
Int. Cl.[4] A01K *39/02*
U.S. Cl. 119—77 **6 Claims**



1. A liquid dispensing apparatus for insertion into an opening in an associated liquid reservoir, which comprises:

a module which includes a first fluid conduit extending into said associated liquid reservoir;

a second fluid conduit being disposed in said module at a higher elevation than said first fluid conduit, said second fluid conduit extending into said associated liquid reservoir and extending to the atmosphere surrounding said module;

a concave chamber in said module having an open upper face disposed in fluid communication with said first fluid conduit, said concave chamber including means for limiting flow out of said first fluid conduit, said means being fixed to and immovable with respect to said concave chamber; and

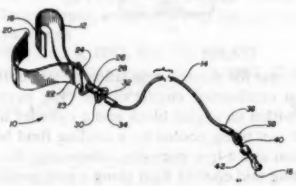
sealing means for sealing said module to the associated liquid reservoir.

4,541,364

ANIMAL RESTRAINT APPARATUS

Michael Contello, 3732 Glen Haven, Houston, Tex. 77025

Filed Mar. 9, 1984, Ser. No. 587,808
Int. Cl.[4] A01K *27/00*
U.S. Cl. 119—109 **4 Claims**



1. Animal restraint apparatus for use in restraining domestic animals of the feline or canine variety or the like, comprising:

an elongate, uniformly stretching elastomeric member having

a proximal loop portion; and

a distal loop portion;

an eyelet base interconnected to said distal loop;

a selectively releasable eyelet in coaxial alignment with said base about a first co-axis, said eyelet being pendantly disposed from said base and having movement relative to said base restricted to rotation substantially about said first co-axis;

a quick release strap having a loop forming means defining a strap loop, said quick release strap comprising:

a first end portion having a first synthetic material surface; and

a second end portion having a second synthetic material surface which matingly and releasably adheres to said first surface when said first and said second surfaces are pressed together;

said elastomeric member being substantially solid and having an outer exposed surface extending substantially the length of said elastomeric member; and

said elastomeric member further including light reflective means for enhancing visibility of said member embedded in said elastomeric member;

said first and second synthetic surfaces of said quick release strap having a force required to effect said releasing which is preselected in functional relation to said stretching of said elastomeric member;

a first engagement means interconnected to said strap loop and having a first union joint;

a second engagement means interconnected to said proximal loop and having a second union joint,

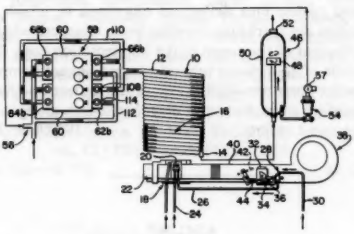
said first and second engagement means being in co-axial alignment about a second co-axis and interconnected adjacent said first and said second union joints, and having relative movement restricted to rotation substantially about said second co-axis.

4,541,365

METHOD AND APPARATUS FOR SUPPLYING FEEDWATER TO A FORCED FLOW BOILER

William S. Jennings, West Covina, and Clark E. Fegraus, Laguna Beach, both of Calif., assignors to Clayton Manufacturing Company, El Monte, Calif.

Filed Oct. 15, 1984, Ser. No. 661,035
Int. Cl.[4] F22D *5/26*
U.S. Cl. 122—451 R **23 Claims**



1. In a feedwater control system for supplying water to a forced flow boiler or the like in which combustion gases are used to heat the water, the combination which comprises:

(a) a positive displacement pump having a water inlet, an outlet, a plurality of discrete pumping elements with each pumping element being arranged to pump a predetermined quantity of water from the inlet to the outlet during each cycle of the pump, and disabling means associated with each pumping element for selectively defeating the pumping action of the associated pumping element, and

(b) control means responsive to the demand for water in the boiler within a preset range for controlling at least one of the disabling means to periodically defeat the pumping action of the associated pumping element at a predetermined cyclic rate and with a duty cycle that varies in accordance with the demand for water in the boiler.

21. The method of supplying feedwater to a forced flow

boiler wherein the flow of fuel to a burner is controlled in a continuous manner in accordance with the quantity of steam desired and wherein a positive displacement pump having a plurality of discrete pumping elements is connected between the boiler and a source of feedwater, the pump having means associated with each pumping element for selectively disabling the pumping action of said element, comprising:

(a) determining the water flow rate required by the boiler;

(b) operating the feedwater pump to supply water to the boiler; and

(c) disabling at least one of the pumping elements on a periodic basis with a variable duty cycle, the duty cycle bearing a relationship to the demand for water.

4,541,366

FEED WATER PREHEATER

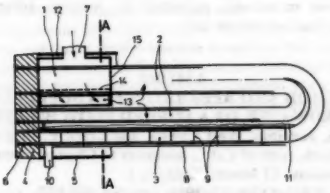
Helmut V. Lang, Wettingen, and Son LeMong, Baden, both of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Apr. 24, 1984, Ser. No. 603,314

Claims priority, application Switzerland, Apr. 29, 1983, 2308/83

Int. Cl.⁴ F22D *1/28*

U.S. Cl. 122—441 **4 Claims**



1. A feed water preheater of horizontal type provided with a steam shell and a built-in desuperheater, the preheater including a sheet metal casing and a baffle arrangement which divides said casing into deflection chambers in which steam flows across desuperheater bundles to be desuperheated prior to introduction of the steam into a condensation zone defined by a bundle of condensate tubes the improvement comprising, steam outlet ports provided in one of the deflection chambers and extending over the entire chamber length along sides of the sheet metal casing.

4,541,367

COMBUSTION AND POLLUTION CONTROL SYSTEM

John E. Lindberg, Lafayette, Calif., assignor to Owen, Wickersham & Erickson, P.C., San Francisco, Calif.

Division of Ser. No. 190,932, Sep. 25, 1980, Pat. No. 4,393,817, which is a division of Ser. No. 657,747, Feb. 13, 1976, abandoned, which is a continuation-in-part of Ser. No. 613,867, Sep. 16, 1975, abandoned, which is a continuation-in-part of Ser. No. 356,589, May 3, 1973, abandoned, which is a continuation-in-part of Ser. No. 227,440, Feb. 18, 1972, abandoned. This application Jul. 14, 1983, Ser. No. 514,109

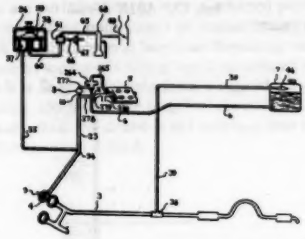
Int. Cl.⁴ F02B *19/00, 47/00, 43/08, 51/00*

U.S. Cl. 123—25 M **12 Claims**

1. A method for providing improved combustion and reduced emissions in an internal combustion engine, having a combustion zone and an exhaust, comprising

at speeds above idle feeding both fuel and controlled amounts of an aqueous fluid into said combustion zone, and

in addition feeding controlled amounts of hot exhaust gas and air into said combustion zone, and



in response to engine needs, increasing the weight ratio of said aqueous fluid to said fuel during engine acceleration.

4,541,368

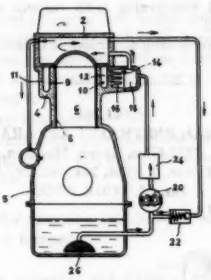
PROCESS AND DEVICE FOR THE RAPID WARMUP AND THERMAL REGULATION OF THE LUBRICATING OIL OF AN INTERNAL COMBUSTION ENGINE

Armand Castarède, Meudon la Foret, France, assignor to Regie Nationale des Usines Renault, Boulogne Billancourt, France

Filed Apr. 26, 1984, Ser. No. 603,962

Int. Cl.⁴ F01P *11/08*

U.S. Cl. 123—41.33 **4 Claims**



1. A process for thermal regulation of the lubricating oil of an internal combustion engine of the type having cylinders disposed within an engine block and a cylinder head fixed on said block and being cooled by a cooling fluid having a high specific heat and a low viscosity, comprising the steps of:

circulating said cooling fluid along a path passing through a heat exchange zone of said block thermally adjacent at least the upper portions of said cylinders, said path not passing through said cylinder head;

circulating said oil along a path passing thermally adjacent said cooling fluid in said heat exchange zone and through said cylinder head; and

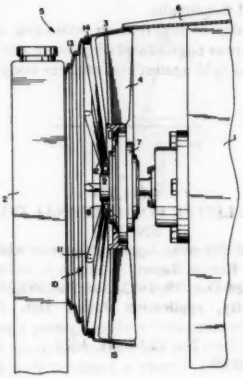
cooling said oil during normal engine operation by heat transfer from said oil to said cooling fluid at said heat exchange zone.

4,541,369

COOLING APPARATUS FOR COMBUSTION ENGINE

Thomas Ruhl, Stuttgart, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Apr. 16, 1984, Ser. No. 600,815
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1983, 3315343
Int. Cl.⁴ F01P 5/06
U.S. Cl. 123—41.49 11 Claims



1. Cooling apparatus for liquid cooled internal combustion engine and the like, comprising:

a heat exchanger;

an internal combustion engine;

an axial blower fan drivingly connected to the engine and disposed between the engine and the heat exchanger, said blower fan having an axle fan blade extending radially from the axle and with a centrally disposed hub means; and

an air guide ring for guiding air flow around the periphery of the fan blades,

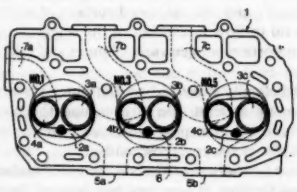
wherein said air guide ring is supported in position by at least one support bracket arm attached to the engine and spoked support wheel means rotatably connected to the outer circumference of the hub means, and wherein the spoked support wheel means is supported at the hub means by roller bearing means and vulcanized rubber at the periphery of the roller bearing.

4,541,370

INTAKE AND EXHAUST PASSAGES IN CYLINDER HEADS OF AN OPPOSED-CYLINDER ENGINE

Tatsuo Sakai, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 6, 1983, Ser. No. 558,632
Claims priority, application Japan, Dec. 7, 1982, 57-214145
Int. Cl.⁴ F02B 75/24
U.S. Cl. 123—56 AC 3 Claims



1. In cylinder heads of an opposed six-cylinder engine of the type wherein said cylinder heads are disposed on opposite sides of a crankcase including cylinder blocks, each of the latter having three cylinders, the improvement wherein

said three cylinders of each block being arranged in firing order;

an intake valve provided in each cylinder head adjacent each of said cylinder respectively communicating therewith;

an exhaust valve provided in each cylinder head adjacent each of said cylinders respectively communicating therewith;

said intake valves and said exhaust valves communicating with each said cylinder being disposed in the same arrangement with respect to said each cylinder so that in each of said cylinder heads respectively the distances between adjacent of the intake valves are equal to each other;

each said cylinder head being formed with: a common intake passage communicating all said intake valves in said each cylinder head with each other, exhaust passages and two openings into said common intake passage and openings out of said exhaust passages, respectively;

each of said two openings in said each cylinder head for the common intake passage in said each cylinder head being located at a position between adjacent of said intake valves in said each cylinder head so that portions of said common intake passage from respective of said two openings to closest of said intake valves in said each cylinder head for every said cylinder are equal in length; and

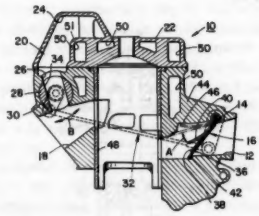
said exhaust passages being exclusively provided for each of said exhaust valves.

4,541,371

TWO CYCLE ENGINE

Minoru Kageyama, Hamamatsu; Takeo Hirose, Shizuoka; Tadao Matsui, Shizuoka; Hiroshi Ogino, Shizuoka; Shiro Yoshida, Shizuoka, and Takayuki Suzuki, Hamamatsu, all of Japan, assignors to Suzuki Motor Co., Ltd., Shizuoka, Japan

Filed Sep. 18, 1984, Ser. No. 651,706
Claims priority, application Japan, Sep. 19, 1983, 58-172744; Nov. 8, 1983, 58-172588[U]; Dec. 28, 1983, 58-202755[U]; Jan. 13, 1984, 59-3273[U]; Jan. 13, 1984, 59-3277[U]
Int. Cl.⁴ F01N 7/08; F02B 27/04
U.S. Cl. 123—65 PE 28 Claims



1. A two cycle engine comprising a subchamber which is in communication with an exhaust port by way of a passage, a valve for opening and closing said passage, a reed valve unit for opening and closing an inlet port, actuating means for actuating said reed valve unit and said valve both of which are operatively associated with one another and driving means for driving said actuating means.

4,541,372
ENGINE WITH LOAD DEPENDENT VARIABLY OPERABLE INTAKE AND EXHAUST VALVING

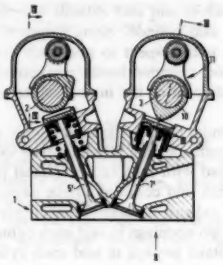
Edwin Weiss, Gummersbach, Fed. Rep. of Germany, assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 27, 1983, Ser. No. 565,323

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1983, 3306355

Int. Cl.⁴ F01L *1/34*

U.S. Cl. 123—90.17 **3 Claims**



1. An internal combustion engine with variable, load dependent valve timing first and seciond pairs of intake and exhaust valves, respectively, in each cylinder, a pair of engine driven continuously rotating intake and exhaust valve camshafts with cams thereon engageable at all times, respectively, with the intake and exhaust valves of each cylinder, the cams engageable with the second pair of intake and exhaust valves for each cylinder for actuating the same being mounted for free rotation on their respective camshafts to render the drive of each pair by their camshafts inoperative at times, and coupling means operable to engage the freely rotatable cams with the camshaft for rotation, to thereby render operative the drive of the second pair of intake and exhaust valves of each cylinder concurrent with the actuation of the first pair of valves for each cylinder.

4,541,373
OIL LASH ADJUSTER

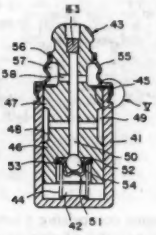
Yoich Ishida, Niiza, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 5, 1984, Ser. No. 668,123

Claims priority, application Japan, Nov. 4, 1983, 58-207258; Mar. 29, 1984, 59-61889; Mar. 29, 1984, 59-61890; Mar. 29, 1984, 59-61891

Int. Cl.⁴ F01L *1/24*

U.S. Cl. 123—90.55 **8 Claims**



1. A sealed type of oil lash adjuster, comprising

(a) a cylindrical plunger body having a closed bottom;

(b) a plunger projecting from the top of said plunger body and slidable therewithin to form a high pressure chamber between said bottom of said plunger body and a bottom surface of said plunger;

(c) said high pressure chamber being connected via a reverse check valve with a reservoir chamber;

(d) a substantially cylindrical diaphragm with an upper edge inserted to form a liquid seal on the outer surface of said plunger, partitioning off said reservoir chamber on the inside;

(e) A lower edge of said diaphragm being pressure seated to form a liquid seal on the outer surface of the upper part of said plunger body by means of a retainer about the exterior of said diaphragm;

(f) a lower edge of said retainer projecting downward beyond the lower edge of said diaphragm and being directly pressed and held against said plunger body.

4,541,374
HYDRAULIC LIFTER FOR INTERNAL COMBUSTION ENGINE

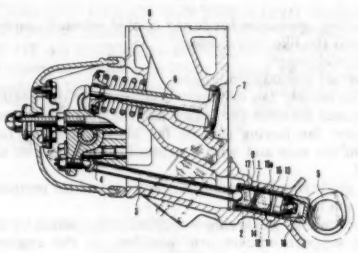
Hisashi Kodama, Nagoya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Dec. 19, 1983, Ser. No. 563,246

Claims priority, application Japan, Dec. 29, 1982, 57-201400[U]

Int. Cl.⁴ F01L *1/24*

U.S. Cl. 123—90.59 **2 Claims**



1. A hydraulic lifter of an oil-supplying type for an internal combustion engine comprising:

a cylindrical body installed substantially in a horizontal position and provided with an oil inlet port perforated at the cylindrical wall;

a plunger slidably inserted into the body;

a push rod seat for cup-like shape inserted into one end of said cylindrical body in contact with said plunger, said push rod seat having an oil outlet port formed at the outer circumferential surface;

an oil reservoir formed by the internal surfaces of said plunger and said push rod seat;

a pressure chamber formed by the internal surface of said cylindrical body and the outer end surface of said plunger;

a hole for the oil to flow in and out of the reservoir, provided at a junction portion between said plunger and said push rod seat;

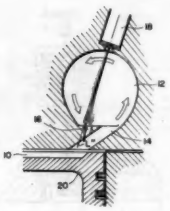
a first groove helically provided on the outer surface of said plunger forming at least one turn around the plunger for connecting said oil inlet port with said hole for the oil to flow in and out of the reservoir; and

a second groove helically provided on the outer surface of said push rod seat forming at least one turn around the push rod seat for connecting said hole for the oil to flow in and out of the reservoir with said oil outlet port.

4,541,375
DIESEL ENGINE SWIRL CHAMBER HAVING IMPROVED MULTIPLE TRANSFER PASSAGE ARRANGEMENT

Toshiaki Tanaka, Chigasaki, Japan, assignor to Nissan Motor Co., Ltd., Japan

Filed Sep. 29, 1982, Ser. No. 428,227
Claims priority, application Japan, Oct. 15, 1981, 56-163498
Int. Cl.⁴ F02B *19/10*
U.S. Cl. 123—261 **4 Claims**



1. In a diesel engine including a main combustion chamber established within an engine cylinder bore and a swirl chamber into which fuel is injected along a predetermined trajectory by a fuel injector;

a main transfer passage leading from said swirl chamber into said main combustion chamber, said main transfer passage being adapted to direct a change of air into said swirl chamber so as to swirl in a predetermined rotational direction therein; and

an auxiliary transfer passage having an inlet port leading from said swirl chamber towards said main combustion chamber, said auxiliary transfer passage being offset with respect to said trajectory in the direction of the swirl and thus located downstream of said trajectory with respect to the direction of swirl, whereby only well atomized fuel which is swept away from said trajectory by said swirl tends to pass through said auxiliary transfer port and enter said main combustion chamber, wherein the cross-sectional area of said auxiliary transfer passage lies within a range of 10–20% of the sum of the cross-sectional areas of the main and auxiliary transfer passages.

4,541,376
INTERNAL COMBUSTION ENGINE

Alun Thomas, P.O. Box 1, Chester, Cheshire, CH1 3SH, United Kingdom

Filed Dec. 8, 1983, Ser. No. 559,604
Claims priority, application United Kingdom, Dec. 20, 1982, 8236149
Int. Cl.⁴ F02B *3/00*
U.S. Cl. 123—280 **4 Claims**

1. An internal combustion engine, comprising:

a cylinder block within which at least one cylinder bore is defined;

a cylinder head mounted on the cylinder block;

a piston mounted for reciprocable movement in each bore;

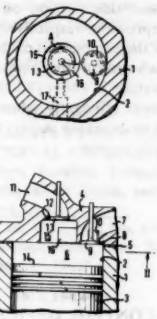
an inlet valve movably mounted in the cylinder head for each cylinder bore;

a variable geometry chamber defined by the cylinder head, the cylinder bore and the piston; inlet means for each cylinder bore through which a combustible mixture is introduced tangentially into the variable geometry chamber, said inlet means cooperating with its respective inlet valve to generate a swirling motion of the combustible mixture within its respective variable geometry chamber;

a recess formed in at least one of each piston and adjacent cylinder head to define at the end of the compression stoke of the associated piston a combustion chamber having a substantially smaller cross-section than the cylinder bore;

an exhaust valve movably mounted in the cylinder head for each cylinder bore;

outlet means for each cylinder bore, said outlet means cooperating with its respective exhaust valve for discharging exhaust gas from the combustion chamber;



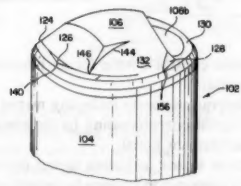
an ignition device in each combustion chamber for producing ignition therein; and

a spoiling device within each combustion chamber for breaking up the swirling motion of the combustible gas at or near the end of the associated piston's compression stroke so as to produce turbulence in the form of small eddies.

4,541,377
PISTON DOME

Louis A. Amos, 266 Glenwood Rd., Wheeling, W. Va. 26003

Filed Jan. 23, 1985, Ser. No. 694,152
Int. Cl.⁴ F02F *3/24*
U.S. Cl. 123—307 **6 Claims**



1. In an internal combustion engine including at least one combustion chamber having an intake opening for introduction of an air-fuel mixture into the chamber and an exhaust opening for removal of exhaust gases from the chamber, valve means for opening and closing the intake and exhaust openings, and a generally cylindrical piston which reciprocates along its longitudinal axis relative to the chamber, the improvement which comprises

an arcuate dome-shaped piston head portion (**106**) extending normal to the piston axis and having intake and exhaust side portions (**106*a*, 106*b***) opposite the chamber intake and exhaust openings, respectively, said head portion including

(a) a pair of depressions (**108*a*, 108*b***) symmetrically arranged in said intake and exhaust side portions, respectively, intermediate the piston axis and a peripheral edge of said head portion;

(b) first channel means (**124**) arranged adjacent a base of said head intake side portion for directing the air-fuel

mixture from the intake opening around said dome-shaped head portion;

(c) second channel means (126) arranged between said first channel means and said intake side portion depression for directing the air-fuel mixture upwardly to produce a swirling turbulent flow when the piston is displaced toward the combustion chamber; and

(d) a pair of first tapered recesses (128) arranged in said head exhaust side portion on opposite sides of said exhaust depression, respectively, for directing exhaust gases from the combustion chamber toward the exhaust opening, whereby during operation of the engine, the air-fuel mixture is conveyed through the combustion chamber more efficiently when the engine passes from an exhaust to an intake stroke, thereby to increase efficiency of the engine.

4,541,378

THROTTLE CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINE

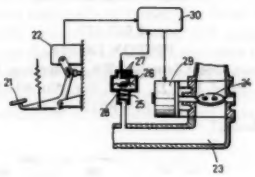
Sunao Kitamura, Nagoya, Japan, assignor to Aisan Kogyo Kabushiki Kaisha, Obu, Japan

Filed Jun. 15, 1984, Ser. No. 621,183

Claims priority, application Japan, Sep. 12, 1983, 58-141762[U]

Int. Cl.⁴ F02M *1/14*

U.S. Cl. 123—333 **2 Claims**



1. A throttle control device for an internal combustion engine comprising:

(a) an acceleration sensor including means for generating an output signal corresponding to the amount of depression of an accelerator pedal;

(b) a vacuum sensor including means for varying an output signal in response to change in negative pressure in an air intake passage between a fully closed position of a throttle valve upon release of the accelerator pedal and an open position of a throttle valve upon depression of the accelerator pedal;

(c) an electric control circuit including means for receiving the output signals of said acceleration sensor and said vacuum sensor, said electric control circuit including means for generating a control signal in response to said output signals;

(d) a throttle valve driving motor including means for operating in response to said control signal to drive a throttle valve against the biasing force of a back spring normally biasing the throttle valve in a closed direction, whereby the throttle valve is moved to an open position upon depression of the accelerator pedal;

wherein said control circuit further includes means to cut off power to said driving motor when the output signal from the vacuum sensor corresponds to an open position of the throttle valve and the output signal from the acceleration sensor corresponds to release of the accelerator pedal.

4,541,379

VALVE ARRANGEMENT

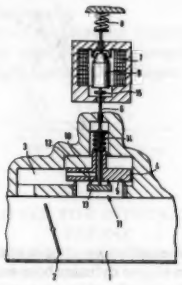
Gerhard Ruschek, Hattersheim; Stephan Wietschorke, Usingen, and Andreas Sausner, Frankfurt, all of Fed. Rep. of Germany, assignors to VDO Aloff Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 1, 1984, Ser. No. 636,529

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1983, 3328960

Int. Cl.⁴ F02M *23/06*

U.S. Cl. 123—339 **13 Claims**



1. In a valve arrangement for regulating the idling speed of an internal combustion engine by controlling the quantity of air on an intake side of an intake manifold leading to the internal combustion engine, said valve arrangement including a return spring, a moveable closure member, and an electromechanical control member having a solenoid arranged for moving said closure member against the force of the return spring via a control element, the improvement comprising:

a connection of predetermined cross section connecting the intake side of the manifold to an inlet side of the closure member;

a valve operatively arranged with respect to said connection, said valve being openable in a closed position of said closure member; and

said connection is arranged within said closure member and said valve is mounted on said closure member.

4,541,380

ELECTRONICALLY CONTROLLED FUEL INJECTION APPARATUS

Hidekazu Oshizawa, Kumagaya, and Kyoichi Fujimori, Higashimatsuyama, both of Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Aug. 24, 1981, Ser. No. 295,874

Claims priority, application Japan, Sep. 5, 1980, 55-125654[U]; Sep. 5, 1980, 55-125655[U]

Int. Cl.⁴ F02M *39/00*

U.S. Cl. 123—357 **5 Claims**

1. An electronically controlled fuel injection apparatus for an internal combustion engine, comprising:

a speed sensor for detecting a rotational speed for said engine;

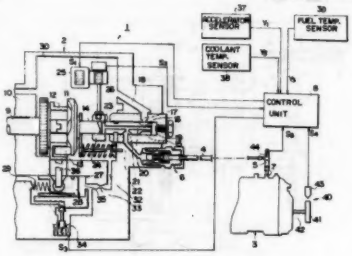
means for adjusting the injection advance angle of fuel injected into said engine;

a control signal generator which include a computing means responsive to at least the output signal from said speed sensor for computing a target injection advance angle for the condition of the operation of said engine at each instant and generates a control signal for controlling said adjusting means so as to obtain the target injection advance angle on the basis of the computing result of the computing means;

means for detecting the occurrence of trouble in said speed sensor;

means for producing a stand-by control signal by which said fuel injection apparatus is able to continue the control operation of the injection advance angle without the normal output signal from said speed sensor;

a switching means responsible to the resulting output from said detecting means for selectively applying the control signal to said adjusting means when the occurrence of



trouble is not detected by said detecting means while the stand-by control signal to said adjusting means in place of the control signal when the occurrence of trouble is detected by said detecting means; and

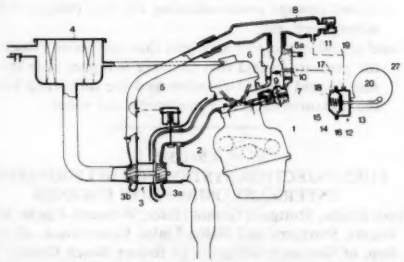
the speed sensor being arranged so as to generate top dead center timing pulses indicating the time a piston of said engine reaches its top dead center respectively.

4,541,381

SYSTEM FOR CONTROLLING THE IGNITION TIMING OF AN ENGINE

Katsuhiko Sugiura, Tama, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 8, 1984, Ser. No. 587,738
Claims priority, application Japan, Mar. 10, 1983, 58-39736
Int. Cl.⁴ F02P 5/04
U.S. Cl. 123—407 **5 Claims**



1. In a system for controlling the ignition timing of an engine provided with a distributor having an advance mechanism, a throttle valve provided in an intake passage of the engine, and a supercharger having a compressor provided in said intake passage of the engine, the improvement wherein

said compressor is provided in said intake passage upstream of the throttle valve,

a pulsation-reducing chamber having a predetermined volume for diminishing pulsation of intake air pressure, said chamber constitutes a part of said intake passage and is provided between the compressor and the throttle valve,

a vacuum advance device comprising first and second chambers between a diaphragm of the vacuum advance device, and a rod connecting said diaphragm to the advance mechanism of said distributor;

a first signal port provided in a wall of said intake passage at a position such that the pressure thereat varies with the variation of the opening degree of said throttle valve;

a first passage communicating said first chamber with said first signal port;

a second signal port communicated with the pulsation-reducing chamber;

a second passage communicating said second chamber with said second signal port; and

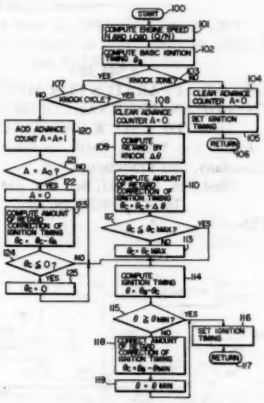
said vacuum advance device being so arranged that said diaphragm is deflected by the difference between pressures at said first and second signal ports in the retard direction at higher engine speed.

4,541,382

METHOD AND APPARATUS FOR IGNITION TIMING CONTROL OF INTERNAL COMBUSTION ENGINE

Katsuharu Hosoe, Kariya; Yasuhito Takasu, Toyohashi, and Toshiharu Iwata, Aichi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 24, 1983, Ser. No. 478,548
Claims priority, application Japan, Mar. 25, 1982, 57-48411
Int. Cl.⁴ F02P 5/14
U.S. Cl. 123—425 **8 Claims**



1. A method of controlling ignition timing for an internal combustion engine, comprising the steps of:

detecting revolution speed of said engine;

detecting load exerted on said engine;

determining a basic ignition timing θ_B based on said detected speed and load, said θ_B representing an upper knocking limit of said engine;

sensing the occurrence of knocking in said engine; and

computing an engine timing θ, based on said basic timing θ_B and an amount of retard correction θ_c, to be appiled to said engine, wherein θ_c is advanced if no knocking is sensed and retarded if knocking is sensed, and wherein said computing step further includes the steps of:

determining a retard amount $\Delta\theta$ based on said sensed knocking,

computing said amount of retard correction θ_c based on said determined retard amount $\Delta\theta$ and the most recent previous value of θ_c,

limiting said amount of retard correction θ_c to a value no more than a maximum value $\theta_{c\,max}$,

calculating the ignition timing θ to be applied to said engine by subtracting θ_c from θ_B, and

setting θ equal to a defined minimum value θ_{min} whenever said calculation of θ yields a value less than θ_{min}.

4. An aparatus for controlling ignition timing of an internal combustion engine, comprising:

detector means for detecting revolution speed of and load exerted on said engine;

basic timing means for determinig a basic ignition timing θ_B based on the detections of said detector means, said θ_B representing an upper knocking limit of said engine;

knock sensor means for sensing the occurrence of knocking in said engine; and

engine ignition timing means for determining actual ignition timing θ for application to said engine based on said basic ignition timing and said sensed occurrence of knocking, said engine ignition timing means including

means for determining an amount of retard $\Delta\theta$ based on said sensed knocking,

means for calculating a retard correction amount θ_c based on $\Delta\theta$ and the most recent value of θ_c,

means for setting θ_c at a maximum value $\theta_{c\ max}$ if said calculated amount of retard correction exceeds $\theta_{c\ max}$,

means for determining the actual ignition timing θ by substracting the retard correction amount θ_c from the basic ignition timing θ_B, and

means for setting θ at a minimum value θ_{min} if said determined actual ignition timing falls below θ_{min}.

4,541,383

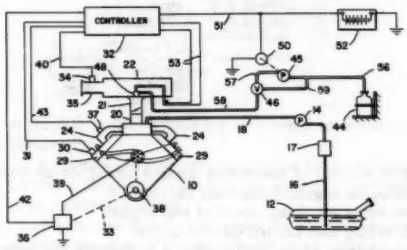
METHOD AND APPARATUS FOR MINIMUM KNOCK OPERATION OF AN INTERNAL COMBUSTION ENGINE ON LOW KNOCK-RATED FUEL

Alfred J. Jessel, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Feb. 17, 1981, Ser. No. 234,810

Int. Cl.⁴ F02D *19/12*

U.S. Cl. 123—435 **5 Claims**



1. The method of operating an internal combustion engine on a low knock-rated fuel as the primary fuel system for said engine with minimum knocking under load conditions which comprises:

detecting a knock condition in a combustion chamber of said engine,

generating a knock signal in response to said knock condition,

simultaneously detecting load condition on said engine inducing such knock condition, and

generating another signal in response to said load condition,

supplying an anti-knock fluid to said engine in response to simultaneous detection of both said knock signal and said load condition signal, and

selectively varying the amount and the extent of said supply of said anti-knock fluid in response to said load condition such that said supply is only sufficient to maintain said knock signal below a predetermined level during operation of said engine under said load condition.

4,541,384

SYSTEM FOR CONTROLLING THE AIR-FUEL RATIO SUPPLIED TO AN ENGINE

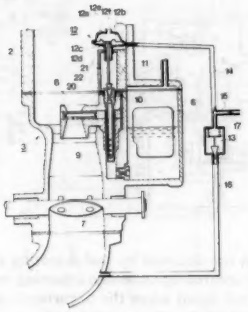
Kazuo Nakazato, Fuchu, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 5, 1984, Ser. No. 586,572

Claims priority, application Japan, Mar. 8, 1983, 58-37778

Int. Cl.⁴ F02M *7/24*

U.S. Cl. 123—437 **4 Claims**



1. A system for controlling the air-fuel ratio supplied to a combustion engine having an intake passage, a carburetor having a main nozzle, an air bleed communicated with the main nozzle and a throttle valve, and an exhaust passage and a supercharger provided in the intake passage, and further comprising:

a valve provided in an inlet of said air bleed;

an actuator comprising a diaphragm operatively connected to said valve and first and second chambers defined by said diaphragm;

means for communicating said first chamber with said intake passage at the upstream side of said throttle valve;

a first passage for communicating said second chamber with said intake passage at the downstream side of said throttle valve;

a check valve provided in said first passage;

a second passage communicating the first passage with the atmosphere; and

said actuator being so arranged that said valve closes when the pressure in said first chamber is higher than the pressure in said second chamber and the difference between the pressures exceeds a predetermined value.

4,541,385

FUEL INJECTION SYSTEM FOR SELF-IGNITING INTERNAL COMBUSTION ENGINES

Franz Eheim, Stuttgart; Gerald Höfer, Weissach-Flacht; Konrad Eckert, Stuttgart, and Heinz Links, Baiersbronn, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Division of Ser. No. 225,164, Jan. 15, 1981,. This application Oct. 20, 1983, Ser. No. 543,719

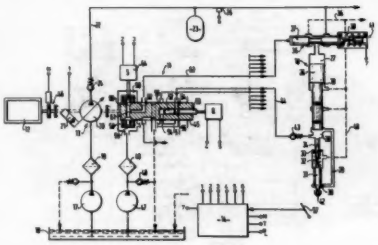
Claims priority, application Fed. Rep. of Germany, Jan. 15, 1980, 3001155

Int. Cl.⁴ F02M *39/00*

U.S. Cl. 123—446 **3 Claims**

1. A fuel injection system including a plurality of pump/nozzles for self-igniting internal combustion engines, each of said pump/nozzles including a pump piston and a pump work chamber below said pump piston, a deviation piston apparatus arranged to determine fuel quantity to be injected and further arranged to store fuel in said pump work chamber below said pump piston, said deviation piston apparatus including a variable stroke metering piston cooperating with a supply chamber below said stroke metering piston that is selectively connected

via a first 3/2-way valve with a fuel source as well as with said pump chamber of one of said pump/nozzles, said metering piston being displaceable counter to a spring and said first 3/2-way valve in one control position is arranged to connect a metering supply chamber disposed on the side of the metering piston remote from said spring with the fuel source and in another control position is arranged to connect said metering supply chamber with said pump work chamber of said pump-



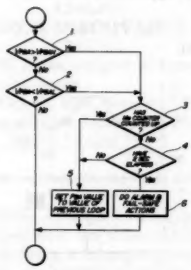
/nozzles wherein said spring acts as a drive means for said metering piston forcing a supply of fuel out of the metering supply chamber into said pump work chamber and a stroke of said metering piston is measured at least indirectly by means of a corresponding transducer and the measurement value is processed in an electronic control device in which characteristics such as those of the engine are processed, and by means of which said 3/2-way valve of the injection system is triggerable.

4,541,386

ABNORMALITY DETECTING APPARATUS FOR MEANS FOR SENSING OPERATING PARAMETERS OF AN INTERNAL COMBUSTION ENGINE

Noriyuki Kishi, Itabashi, and Yoshikazu Hirao, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 12, 1984, Ser. No. 619,790
Claims priority, application Japan, Jun. 30, 1983, 58-118700
Int. Cl.[4] F02B *3/00*; G06F *11/04*
U.S. Cl. 123—479 **6 Claims**



1. An abnormality detecting apparatus for detecting abnormality in operating parameter sensing means for sensing the value of an operating parameter of an internal combustion engine in synchronism with generation of pulses of a signal indicative of predetermined rotational angle positions of said engine, said apparatus comprising:

comparator means for determining whether or not the detected value of said operating parameter lies outside a predetermined range which is a normal range of output of said operating parameter sensing means, that is capable of being produced when said engine is operating in a normal state;

first timer means responsive to results of said determination by said comparator means for measuring, when the detected value of said operating parameter lies outside said predetermined range, time elapsed from the instant at which the detected value of said operating parameter falls outside said predetermined range;

decision means for deciding that said operating parameter sensing means is faulty when the elapsed time measured by said first timer means exceeds a first predetermined period of time; and

second timer means disposed to be reset each time a pulse of said signal is generated for measuring time elapsed from the instant at which it becomes reset;

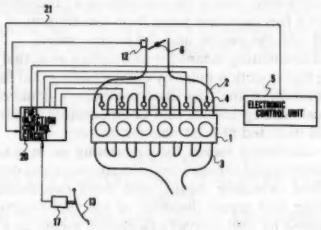
said second timer means being adapted to halt the measuring operation of said first timer means when the elapsed time measured by said second timer means reaches a second predetermined period of time which is shorter than said first predetermined period of time, whereby the detection of abnormality in said operating parameter sensing means is interrupted.

4,541,387

SYSTEM FOR CONTROLLING FUEL INJECTION FOR MULTIPLE-DISPLACEMENT ENGINES

Koji Morikawa, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 13, 1983, Ser. No. 494,205
Claims priority, application Japan, May 18, 1982, 57-83617
Int. Cl.[4] F02D *17/00*
U.S. Cl. 123—481 **2 Claims**



1. A system for controlling fuel injection for a multiple-displacement engine having cylinders and a respective solenoid-operated fuel injection valve for each cylinder, a throttle plate in an intake manifold communicating with the cylinders, a depressable accelerator pedal operatively connected to the throttle plate, and an electronic control unit, comprising:

switch means for rendering each solenoid-operated fuel injection valve respectively inoperative;

said accelerator pedal being arranged to be further depressed after a full throttle plate open position;

a throttle plate position sensor for producing an output signal in proportion to the throttle plate position;

an accelerator pedal position sensor for producing an output signal dependent on the accelerator pedal position;

a fuel injection control circuit responsive to said output signals of said throttle plate position sensor and said accelerator pedal position sensor for operating said switch means to cut off fuel to a corresponding of said cylinders, respectively;

said fuel injection control circuit being arranged to cut off the fuel to respective of said cylinders via corresponding of said switch means in accordance with idle cylinder patterns which are such that particular cylinders are not repeatedly idled, and such that the number of idling cylinders by the fuel cut-off is dependent on said output signals and progressively decreases with an increase of the depression degree of the accelerator pedal after the full throttle plate open position.

4,541,388

FUEL INJECTION TIMING CONTROL UNIT FOR AN ELECTRONIC CONTROLLED FUEL INJECTION APPARATUS MOUNTED ON AN INTERNAL COMBUSTION ENGINE

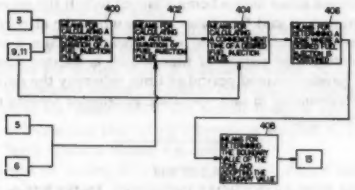
Michiaki Ujihashi, Mishima, and Junichi Saiki, Susono, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed May 10, 1984, Ser. No. 608,668

Claims priority, application Japan, May 16, 1983, 58-84255

Int. Cl.⁴ F02M *51/00*

U.S. Cl. 123—486 **8 Claims**



1. A fuel injection timing control unit for an electronic controlled fuel injection apparatus mounted on an internal combustion engine, comprising:

a first detecting means for detecting an engine speed;

a measuring means for measuring an amount of air introduced into the internal combustion engine;

a second detecting means for detecting at least one parameter which indicates a driving condition of the engine;

a first calculating means for calculating a fundamental duration of a fuel injection pulse from the amount of air introduced into the engine and the engine speed;

a second calculating means for calculating an actual duration of the fuel injection pulse by compensating said fundamental duration of the fuel injection pulse calculated by the first calculating means, said compensating occurring due to said detected at least one parameter;

a third calculating means for calculating an injection pulse commencement timing from said engine speed detected by said first detecting means, said third calculating means adopting said actual duration of the fuel injection pulse calculated by said second calculating means as a parameter;

a memorizing means for memorizing multiple zones of injection pulse commencement timings;

a determining means for determining which zone said injection pulse commencement timing calculated by said third calculating means falls within, the zone being one of said multiple zones memorized in said memorizing means; and

a setting means for setting a boundary value of said zone determined by said determining means as an amended injection pulse commencement timing, whereby said internal combustion engine is operated with said amended injection pulse commencement timing and said actual injection pulse duration.

4,541,389

CURRENT REGULATOR FOR AN ELECTROMAGNETIC LOAD UTILIZED IN CONJUNCTION WITH AN INTERNAL COMBUSTION ENGINE

Wolfgang Kosak, Möglingen; Rolf Reischl, Stuttgart, and Andreas Pschera, Beerfelden, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 13, 1984, Ser. No. 620,054

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1983, 3325044

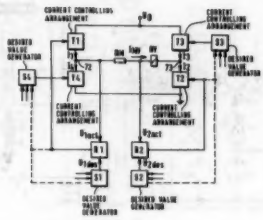
Int. Cl.⁴ F02D *5/00*

U.S. Cl. 123—490 **14 Claims**

1. A current regulator for an electromagnetic load used in conjunction with an internal combustion engine and connected in series with a precision resistor having two access terminals at respective ends thereof, the current regulator comprising:

first voltage means for providing a first desired voltage which is freely selectable;

first regulator means for comparing the actual voltage at one of said access terminals to said first voltage and for regulating the potential at said one access terminal to correspond to said first voltage irrespective of the potential at the other one of said access terminals;



second voltage means for providing a second desired voltage which is freely selectable; and,

second regulator means for comparing the actual voltage at said other access terminal to said second voltage and for regulating the potential at said other access terminal to correspond to said second voltage irrespective of the potential at said one access terminal.

4,541,390

METHOD AND APPARATUS FOR DETERMINING AN INJECTION MOMENT DURING A START PROCESS IN AN INTERNAL COMBUSTION ENGINE

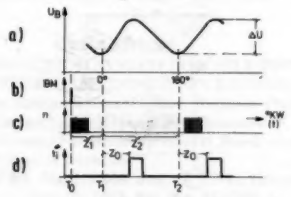
Ulrich Steinbrenner, Stuttgart, and Dieter Günther, Murr, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 19, 1984, Ser. No. 590,878

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1983, 3310920

Int. Cl.³ F02M *51/00*

U.S. Cl. 123—491 **22 Claims**

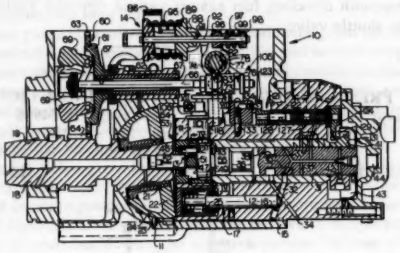


1. A method for determining a moment of injection of fuel during a start in an internal combustion engine with an intermittent fuel injection and provided with a main power supply, a battery, a crankshaft and a fuel injection valve, the method comprising the step of controlling a time point for the injection valve, wherein the improvement comprising shifting the time point of the injection valve control for a delay-period of time (Zo) depending upon the number of revolutions of the crank shaft so that said time point respectively occurs approximately within a following maximum value of a cyclically fluctuating voltage of the main power supply depending upon the number of revolutions of the crank shaft.

4,541,391
TIMING CONTROL FOR FUEL INJECTION APPARATUS

Dennis H. Gibson, Edelstein, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 27, 1984, Ser. No. 593,915
Int. Cl.⁴ F02M *41/06*
U.S. Cl. 123—500 **6 Claims**



1. A fuel injection apparatus including a pumping means for delivering charges of fuel at timed intervals, a housing having a plurality of outlet ports, a distributor rotor rotatably mounted in the housing, a delivery passage communicating the charges of fuel from the pumping means to the distributor rotor, and a speed responsive device driven by the pumping means and including an element movable in response to changes in the speed of the pumping means comprising:

means for driving the distributor rotor in timed relationship to the pumping means for synchronizing the distribution of fuel charges from the delivery passage to the outlet ports, said means including a planetary gear arrangement driven by the pumping means and drivingly connected to the distributor rotor, said planetary gear arrangement including a ring gear adapted to change the timing phase relationship between the rotor and the delivery passage; and

means for mechanically connecting the ring gear to the movable element so that said ring gear is rotated in response to movement of the element.

4,541,392
FUEL INJECTION CONTROL DEVICE FOR DIESEL ENGINE

Shigeru Ogino, Aichi, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Aug. 11, 1983, Ser. No. 522,213
Claims priority, application Japan, Aug. 30, 1982, 57-150397
Int. Cl.⁴ F02M *59/20*
U.S. Cl. 123—502 **8 Claims**

1. A fuel injection control device for a diesel engine, comprising:

sensors for producing signals upon sensing various states of operation of the engine, the sensors including a temperature sensor to produce a temperature signal upon sensing the temperature of a coolant for cooling the engine;

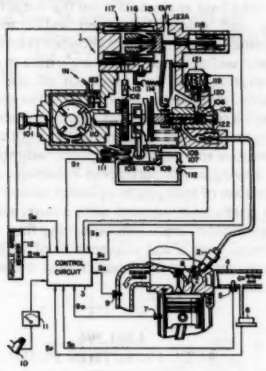
a first arithmetic operation means for performing an arithmetic operation to determine the rate of fuel injection in accordance with the signals produced by the sensors;

a second arithmetic operation means for performing an arithmetic operation to determine the timing of fuel injection in accordance with the signals delivered by the sensors;

a first temperature judging means for comparing the coolant temperature represented by said temperature signal with a predetermined reference temperature to judge whether the coolant temperature exceeds the reference temperature;

an injection rate correcting means for effecting a subtractive correction by a predetermined amount from the fuel injection rate determined by the first arithmetic operation means when said first temperature judging means judges said coolant temperature exceeds the reference temperature;

an injection timing correcting means for advancing by a predetermined value the fuel injection timing determined by the second arithmetic operation means when the fuel



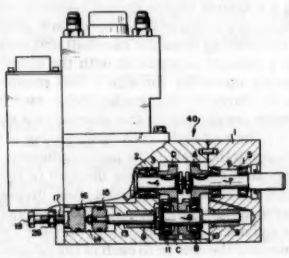
injection rate is reduced by said injection rate correcting means, said predetermined value corresponding to and compensating for said subtractive correction of the fuel injection rate so as to prevent a decrease in engine output due to said subtractive correction of said final injection rate; and

a fuel injection pump for pressurizing fuel to deliver the pressurized fuel to injection nozzles.

4,541,393
APPARATUS FOR CONTROLLING FUEL INJECTION TIMING

Fumihide Sato, Oyama, and Toyoichi Ono, Isehara, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Jun. 27, 1983, Ser. No. 508,099
Claims priority, application Japan, Jun. 30, 1982, 57-097254[U]
Int. Cl.⁴ F02M *59/20*
U.S. Cl. 123—502 **2 Claims**



1. An apparatus for controlling fuel injection timing, comprising:

a fuel injection timing control mechanism including a body supporting an input shaft with a first gear secured thereto, an output shaft with a fourth gear secured thereto and an axially movable shaft extending parallel to said input and

output shafts and having a second and a third gear secured thereto, said second and third gears being respectively in mesh with said first and fourth gears, at least one of said first and fourth gears being a helical gear;

a piston-cylinder assembly having a piston rod coupled to said axially movable shaft; and

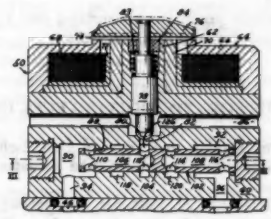
means for controlling the operation of said piston-cylinder assembly, said means including detector means for directly detecting the phases of said first and fourth gears by monitoring said first and fourth gears, means for obtaining detected phase angle data from the output of said detector means and solenoid-operated valve means controlled according to the difference between reference phase angle data and said detected phase angle data to control the flow of operating fluid into and out of said piston-cylinder assembly, said solenoid-operated valve means including a first and a second three-way solenoid-operated valve each having an inlet port communicated with a hydraulic driving pressure source, said first three-way solenoid-operated valve having a first outlet port communicated with a head side section of said piston-cylinder assembly and a second outlet port communicated with a tank, said second three-way solenoid-operated valve having first outlet port communicated with a rod side section of said piston-cylinder assembly and a second outlet port communicated with said tank.

4,541,394

FUEL INJECTION PUMP

Michael M. Schechter, Southfield, and Aladar O. Simko, Dearborn Heights, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 7, 1985, Ser. No. 689,270
Int. Cl.[4] F02M *41/00, 59/00*
U.S. Cl. 123—506 **15 Claims**



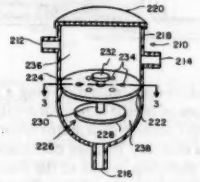
1. A fuel injection pump of the multiple plunger spill port type for an automotive type internal combustion engine, the pump including a housing having a central cavity therein receiving a rotatable engine driven camshaft, a pair of axially spaced stationary pump plunger bores each projecting radially through the housing from the camshaft and each reciprocably mounting a plunger engageable with the camshaft for movement thereby upwardly through a fuel pumping stroke and downwardly through a fuel intake stroke, each bore defining a fuel chamber contiguous to the plunger end opposite to that engaged by the camshaft, each bore having a fuel inlet/spill passage through the wall of the bore contiguous to each chamber for the supply of fuel to and the spill of fuel therefrom, a fuel discharge passage containing fuel pressure responsive means therein connecting each of the chambers individually to an engine cylinder, a source of low pressure fuel, fuel supply lines connecting the source to each of the fill/spill passages and fuel chambers, a low pressure fuel return line, a spill port in the line connected in parallel fuel flow relationship to each of the fill/spill passages, and spill port fuel flow control valve means moveably associated with the supply and return lines to block or permit flow therethrough to control the pressurization of fuel in one of the fuel chambers and its discharge line while supplying fuel at low pressure to another of the chambers, and vice versa, the valve means including a single spill control valve movable to block or unblock the spill port, electromagnetic means energizable to move the spill valve to a spill port blocking position, and a shuttle valve reciprocably movable between a first position connecting one of the pair of fill/spill passages to the supply line and source and the other of the pair of fill/spill passages to the spill port and return line, and vice versa for a second position, the shuttle valve being fuel pressure movable to its reciprocable positions as a function of the pumping movement of the respective plungers associated therewith directing fuel against various opposite portions of the shuttle valve.

4,541,395

PRESSURE REGULATION IN PUMPING A LIQUID

Leroy Geiger, 301 Murray Ave., Appleton, Wis. 54915

Filed Jan. 23, 1984, Ser. No. 573,209
Int. Cl.[4] F02M *37/20*
U.S. Cl. 123—514 **25 Claims**



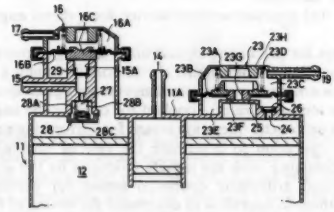
1. A pressure regulator for use in a system wherein a liquid is continuously pumped toward an outlet, and wherein fluid pressure at said outlet is desirous of being maintained at a low level, which is near atmospheric pressure, said regulator comprising a container having three holes therein and a partition dividing said container into an upper chamber and a lower chamber; said partition having aperture means for passage of liquid therethrough from said upper chamber to said lower chamber; at least one of said holes being in a horizontal plane above said partition, and at least one of said holes being in a horizontal plane below said partition; and float means in said lower chamber.

4,541,396

SUPERCHARGED INTERNAL COMBUSTION ENGINE

Kenichi Sato, Ebina, and Yoshitaka Ohki, Yokohama, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jan. 23, 1984, Ser. No. 573,204
Claims priority, application Japan, Jan. 25, 1983, 58-10146
Int. Cl.[4] F02M *39/00*
U.S. Cl. 123—518 **6 Claims**



1. A supercharged internal combustion engine comprising:

an air intake passage means comprising in serial flow relation an air cleaner, an air flow meter, a supercharging impeller, a throttle valve and an intake manifold connected to an engine main portion,

a fuel supply passage means comprising in serial flow relation

a fuel tank and a canister including a reservoir for accommodating evaporated fuel,

a first evaporated fuel supply passage for communicating said canister with said intake manifold downstream from said throttle valve,

a first purge control valve means for controlling said first evaporated fuel supply passage,

a second evaporated fuel supply passage for communicating said canister with said intake passage upstream from said supercharging impeller,

a second purge control valve means for controlling said second evaporated fuel supply passage, wherein said second purge control valve means is opened to urge said canister in communication with said intake passage upstream from said supercharging impeller through said second evaporated fuel supply passage when the negative pressure within said intake passage has reached a predetermined value or more,

a one-way valve provided to cooperate with said first purge control valve, wherein said first purge control valve is operated in correspondence with the negative pressure around said throttle valve, wherein said one-way valve is operated in correspondence with the negative pressure within said intake manifold downstream from said throttle valve, and

wherein said first purge control valve is adapted to open and close one of two openings at the end portion of said first evaporated fuel supply passage while said one-way valve is adapted to open and close the other of said two openings.

4,541,397

GASEOUS FUEL CARBURETION SYSTEM

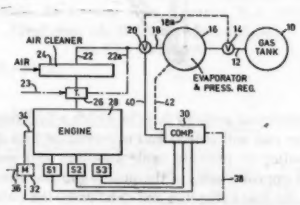
Colin G. Young, Mississauga, Canada, assignor to Emco Wheaton (International) Limited, Toronto, Canada

Continuation of Ser. No. 371,469, Apr. 23, 1982, Pat. No. 4,449,509. This application Apr. 30, 1984, Ser. No. 605,278

The portion of the term of this patent subsequent to May 22, 2001, has been disclaimed.

Int. Cl.[4] F02B *43/00*

U.S. Cl. 123—527 **6 Claims**



1. In a gaseous fuel carburetion system in which air and gaseous fuel are mixed prior to induction into an internal combustion engine, and in which the rate of flow of the induction air is controlled by throttling the intake of the air/fuel mixture, and in which gaseous fuel is supplied to the system from a pressurized source, an improved system for regulating the supply of gaseous fuel to the engine comprising;

(a) sensing means for sensing the speed of rotation of said engine and generating a first control signal which is a measure of the displaced volume rate of the engine in use,

(b) sensing means for sensing the pressure in the induction manifold and generating a second control signal which is a measure of the density of the air induced by the engine which varies according to the load applied to the engine,

(c) means for combining said first and second control signals to generate a third control signal which is measure of the amount of fuel required for optimum combustion of the measured displaced volume rate adjusted to reflect the measured air density such that said third signal varies in response to changes in the induction air flow rate,

(d) means for controlling the rate of flow of the gaseous fuel from the source to the engine by means of said third control signal whereby the rate of flow of the gaseous fuel varies in response to the sensed changes in the parameters related to the air flow rate.

4,541,398

METHOD OF CONTROLLING AN EXHAUST GAS RECIRCULATING VALVE IN AN INTERNAL COMBUSTION ENGINE

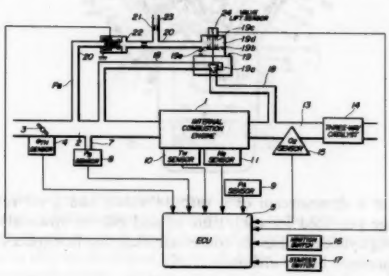
Noriyuki Kishi, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 26, 1984, Ser. No. 624,614

Claims priority, application Japan, Jun. 30, 1983, 58-118720

Int. Cl.[4] F02M *25/06*

U.S. Cl. 123—571 **3 Claims**



1. A method of controlling an exhaust gas recirculating quantity in an internal combustion engine having an exhaust gas passage, an intake air passage, an exhaust gas recirculating passageway communicating said exhaust gas passage with said intake air passage, an exhaust gas recirculating valve arranged across said exhaust gas recirculating passageway for regulating said quantity of exhaust gases recirculating from said exhaust gas passage to said intake air passage, a valve actuator means for actuating said exhaust gas recirculating valve to close or open, and detecting means for detecting actual valve opening of said exhaust gas recirculating valve, the method being adapted to calculate a desired valve opening value of said exhaust gas recirculating valve in response to operating conditions of said engine, calculate the difference between said actual valve opening value detected by said valve opening detecting means and said desired valve opening value, and operate said valve actuator means so as to minimize said difference, the method comprising the steps of: (1) comparing said calculated desired valve opening value with a maximum possible valve opening value of said exhaust gas recirculating valve; and (2) setting said desired valve opening value to said maximum possible valve opening value when said calculated desired valve opening value exceeds said maximum possible valve opening value.

4,541,399

BREATHER ARRANGEMENT FOR INTERNAL COMBUSTION ENGINE

Toshimitsu Tanaka, Yamaguchi; Ryoji Abe, and Koji Asanomi, both of Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Feb. 29, 1984, Ser. No. 584,892

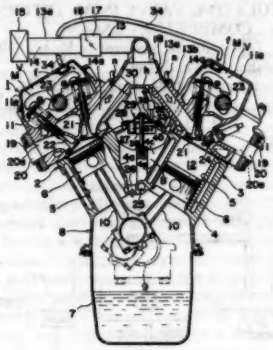
Claims priority, application Japan, Mar. 3, 1983, 58-35508; Mar. 14, 1983, 58-41926

Int. Cl.[4] F02M *25/06*

U.S. Cl. 123—573 **11 Claims**

1. In a V-type internal combustion engine having cam shafts respectively provided in first spaces defined between cylinder heads and head covers of a pair of upwardly diverging cylinder banks, a breather arrangement which comprises a pressure buffer chamber provided in a second space defined between the cylinder banks of a cylinder block and including side walls

constituted by cylinder block walls of said cylinder banks so as to be closed at its upper portion and communicated with an interior of a crankcase, and a communicating passage for communicating said pressure buffer chamber with an intake pas-



sage at a downstream of a throttle valve, and a oil return passage provided for each bank of said pair of upwardly diverging cylinder banks for communicating said first spaces and said pressure buffer chamber.

4,541,400

AIR INTAKE SIDE SECONDARY AIR SUPPLY SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

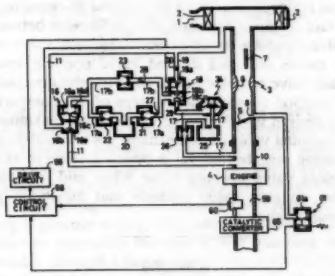
Hideo Kobayashi, Kawagoe, and Yohji Fukutomi, Sayama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 19, 1984, Ser. No. 651,952

Claims priority, application Japan, Sep. 20, 1983, 58-145250[U]

Int. Cl.[3] F02M *23/04*

U.S. Cl. 123—589 **2 Claims**



1. An air intake side secondary air supply system for an internal combustion engine having a carburetor with a throttle valve, comprising:

an air-fuel ratio detection means for detecting an air-fuel ratio from an oxygen concentration of an exhaust gas of the engine and for producing an air-fuel ratio signal;

an air intake side secondary air passage leading to the carburetor on the downstream side of the throttle valve;

an air control valve having a pressure chamber and disposed in said air intake side secondary air passage, for varying a sectional area of said air intake side secondary air passage in response to a magnitude of a fluid applied to said pressure chamber;

a source of first control pressure for generating a first control pressure for opening said air control valve;

a source of second control pressure for generating a second control pressure for closing said air control valve; and

a pressure supply means for selectively supplying one of said first control pressure and said second control pressure to said pressure chamber in accordance with said air-fuel ratio signal, for gradually increasing and decreasing said sectional area, wherein said pressure supply means includes a first pressure supply passage and a second pressure supply passage, a surge tank provided in said first pressure supply passage, and said first pressure supply passage is a one-way pressure supply passage for directing only said first control pressure to said pressure chamber, and said second pressure passage is a one-way pressure supply passage for directing only said second control pressure.

4,541,401

COMPOUND ARCHERY BOW

Joseph M. Caldwell, 2259 W. Big Tujunga Canyon, Tujunga, Calif. 91042

Division of Ser. No. 115,954, Jan. 28, 1980, Pat. No. 4,340,025. This application May 3, 1982, Ser. No. 373,890

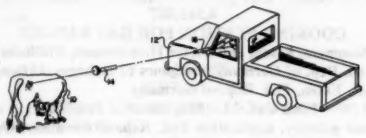
Int. Cl.[4] F41B *5/00*

U.S. Cl. 124—24 R **25 Claims**

1. In a compound archery bow in which a first rigging cable having a live end and a dead end is reeved on and through an eccentric pulley to provide cable shooting and bus portions disposed on opposite sides of the pulley and associated respectively with the first cable live and dead ends, the pulley having two cable grooves defined in the circumference thereof, one of the grooves being spaced from the other along an axis of rotation of the pulley defined by an axle mounted to a movable end of an elongate bow limb arranged to deflect in bending from a relaxed state to a drawn state in response to drawing of a bowstring, the bowstring being connected at one end thereof to the live end of the first cable and at an opposite end thereof to a live end of an opposite rigging cable, the bow having means for connecting a dead end of the opposite rigging cable to the limb, the axle extending transversely of a torsional axis of the limb, each of the first cable shooting and bus portions having an effective point of application of load on the axle, the improvement comprising means, including the pulley and its geometry, for connecting the first rigging cable to the pulley and the opposite cable dead end to the axle in which, in the drawn state of the bowstring, the locations of the effective points of application of the first rigging cable tension loads to the pulley, and of the opposite cable dead end load on the axle, are cooperatively related to each other, to the location of the adjacent limb torsional axis, and to the magnitudes of said loads so as (1) to impose on the limb an insignificant moment about its torsional axis, and (2) to preserve such insignificant moment throughout the deflection of the limbs corresponding to move-

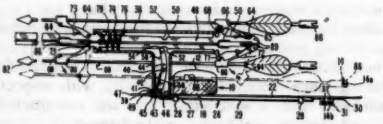
ment of the bowstring for a substantial distance from the drawn state thereof.

4,541,402
LIVESTOCK MARKER
Bobby J. Winters, P.O. Box 30054, Amarillo, Tex. 79120
Filed Oct. 4, 1984, Ser. No. 657,622
Int. Cl.[4] F41B *15/00*
U.S. Cl. 124—27 **14 Claims**



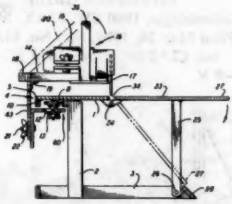
1. A device for use with livestock, comprising:
a. a tag, being a sheet of material, having
b. a tag periphery,
c. an inside surface, and
d. an outside surface,
e. adhesive on the inside surface adapted to adhere the tag to an animal,
f. a dart,
g. a disc on one end of the dart,
h. a face of the disc being about the same size and shape as the tag,
i. retaining means associated with the device for holding the outside surface of the tag against the disc mounting face until the inside surface of the tag impacts on an animal,
j. a gun adapted to propel the dart, disc first, a distance of at least 10 feet.

4,541,403
BOW-MOUNTED QUIVER OF THE MAGAZINE TYPE
Charles DeBlois, 86 Armour Ave., Trenton, N.J. 08619
Filed Apr. 15, 1983, Ser. No. 485,361
Int. Cl.[4] F41B *5/06*
U.S. Cl. 124—51 R **19 Claims**



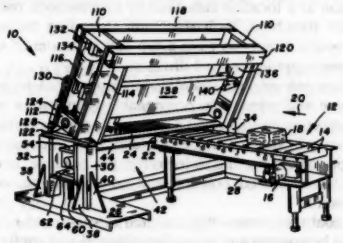
1. A quiver of the magazine type adapted to hold a plurality of arrows, said quiver comprising:
(a) a rotatable magazine;
(b) means for mounting said magazine upon a bow having a bowstring, said magazine being adapted to hold a plurality of arrows having retracted positions in which they are spaced from a bowstring and nock positions in which they are engaged with a bowstring ready for discharge;
(c) means for detachably loading arrows upon the magazine for movement from retracted to nock positions, said arrow-loading means comprising a plurality of arms on the magazine each of which is adapted for supporting an arrow, each of said arms having a normal position in which an arrow supported thereby is in its retracted position, each arm having a moved position in which a supported arrow is displaced to a nock position thereof; and
(d) means for engaging the arms in their normal positions, and for responding to the release of a bowstring to free each arm in successively following order for movement to a moved position, for displacing a supported arrow from its retracted to its nock position.

4,541,404
TILE CUTTING APPARATUS
Robert H. Dols, 18 Milan St., Mentone, Victoria, Australia 3189
PCT No. PCT/AU83/00029, § 371 Date Oct. 26, 1983, § 102(e) Date Oct. 26, 1983, PCT Pub. No. WO83/03073, PCT Pub. Date Sep. 15, 1983
PCT Filed Mar. 2, 1983, Ser. No. 552,049
Claims priority, application Australia, Mar. 3, 1982, PF3000
Int. Cl.[4] B28D *1/04*
U.S. Cl. 125—14 **14 Claims**



1. Tile cutting apparatus comprising:
a work table adapted to support a tile to be cut,
a guide and support track located adjacent and parallel to one side of the top of the work table,
a carriage guided and supported by the track, and
a cantilever arm adapted to support a cut-off saw at a predetermined height above the table, said cantilever arm including
(i) a vertical portion extending from the carriage upwardly to said one side of the table, and
(ii) a horizontal portion extending transversely above the table, and pivotally connected to the vertical portion so that the horizontal portion and hence the cut-off saw may be tilted upwardly away from the table top and then lowered downwardly for pocket cutting into the surface of the tile.

4,541,405
HYDRAULIC STONE SHAPING MACHINE
Thomas L. Schlough, St. Cloud, Minn., assignor to Park Tool Company, St. Cloud, Minn.
Filed Jul. 21, 1980, Ser. No. 170,598
Int. Cl.[4] B28D *1/32*
U.S. Cl. 125—23 R **7 Claims**



1. Apparatus for forming a smooth straight edge along an elongated stone slab, comprising, in combination:
(a) a base member;
(b) a head member connected to said base member to define a blade travel path which lies in a plane forming a variable angle with respect to said base member;
(c) means for varying the magnitude of said variable angle;
(d) an anvil member carried by said base member for sup-

porting a slab of stone so that said plane intersects the slab along a desired line;

(e) a straight blade at least as long as the desired line on said slab;

(f) means mounting said blade in said head member for movement along said blade travel path; and

(g) power applying means connected between said head member and said base member at opposite ends of said blade for causing said movement of said blade.

4,541,406

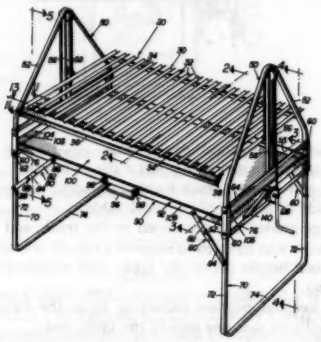
PORTABLE GRILL

Alberto O. DaSambiagio, 1940 SW. 83 Ct., Miami, Fla. 33155

Filed May 24, 1984, Ser. No. 613,443

Int. Cl.⁴ F24C *1/16;* **A47J** *37/04*

U.S. Cl. 126—9 R **10 Claims**



1. A portable grill of the type primarily designed for selective positioning between a collapsed, stored position and an open, operative position, said portable grill comprising:

(a) a base frame including a front and a back disposed in spaced relation to one another and oppositely disposed spaced apart sides, said front, back and sides collectively defining a substantially closed peripheral configuration,

(b) support means comprising a plurality of stanchions spaced from one another and each fixedly secured to said base frame at a junction between said front and each of said sides and said back and each of said sides,

(c) said plurality of stanchions disposed in substantially parallel relation to one another and in transverse relation to said base frame, the latter being secured to each stanchion at a location substantially intermediate the ends of each stanchion, each stanchion extending outwardly in opposite directions from a top and a bottom of said base frame a predetermined distance,

(d) two pair of legs foldably interconnected to said base frame and selectively positionable between an extended supporting position and a collapsed stored position,

(e) two grill support frames foldably interconnected to said support means and selectively positionable between a collapsed stored position and an upstanding, operative position,

(f) a coal tray removably mounted in supported relation on said base frame and being dimensioned and configured for positioning within said closed peripheral configuration,

(g) a grill rack having a dimension substantially equal to but less than said coal tray and configured for stored disposition therein,

(h) positioning means for raising and lowering said grill rack,

(i) said leg pairs being pivotally connected adjacent one end of cooperatively positioned ones of said stanchions extending outwardly from the bottom of said base frame and said two grill support frames pivotally connected to adjacent opposite ends of said cooperatively positioned stanchions, and

(j) said leg pairs and said two grills support frames being pivotal relative to said stanchions into a folded, substantially parallel orientation relative to said base frame, said predetermined distance of extension of said stanchions being sufficient to dispose said leg pairs and grill support frames within the boundaries of said stanchions defined by the longitudinal dimension thereof.

4,541,407

COOKING STATION FOR GAS RANGES

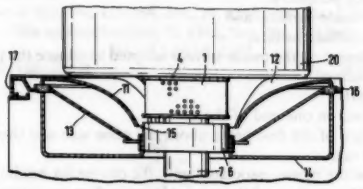
Hans Sommers, Essen, and Dieter Hanselmann, Mülheim , both of Fed. Rep. of Germany, assignors to Ruhrgas Aktiengesellschaft, Essen, Fed. Rep. of Germany

Filed Oct. 23, 1981, Ser. No. 314,500

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1980, 3039982

Int. Cl.⁴ F24C *3/00, 15/14*

U.S. Cl. 126—39 E **24 Claims**



1. A cooking station for gas ranges, whose burner is operating with super-stoichiometric combustion air premixing, comprising:

a burner tray;

a burner head arranged in said burner tray concentric with respect to a burner axis;

a mixing pipe means operatively connected with the burner head for supplying a fuel gas and combustion air mixture to said burner head;

gas nozzle means mounted at the inlet of said mixing pipe for discharging a fuel gas jet into the inlet of said mixing pipe to entrain a super-stoichiometric air volume;

a ceramic insulating ring providing the connection between said mixing pipe and said burner head;

said burner head including inner and outer perforated flame opening rings mounted concentrically with respect to each other and to said burner axis and constructed of heatresistant and oxidizing resistant material, a burner head bottom connecting one end of said rings, and a burner head lid having a flat topside and connecting the other end of said rings; and

the perforations of said inner flame opening ring being so dimensioned that the flames between said rings cannot backfire through the perforations of said inner flame opening ring.

18. A cooking station for gas ranges whose burner is operating with super-stoichiometric combustion air premixing, comprising:

a burner tray;

a radiant burner head arranged in said burner tray concentric with respect to a burner axis;

said burner tray being provided on its side opposite from said burner head with a coating having a lower radiation emission than the material of which the burner tray is made;

a mixing pipe means operatively connected with the burner head for supplying all of the fuel gas and combustion air mixture to said burner head;

gas nozzle means mounted at the inlet of said mixing pipe for discharging a fuel gas jet into the inlet of said mixing pipe to entrain a super stoichiometric air volume;

said burner tray comprising a generally truncated cone-shaped first reflector of corrosion-proof sheet metal being mounted around said radiant burner head so that heat radiated radially outward and downward from said radiant burner head will be reflected upward;

an additional generally truncated cone-shaped second reflector spaced below the entirety of said burner tray for upwardly reflecting substantially all heat radiantly emitted downwardly from said first reflector; and

sealing means, including said reflectors for preventing flow of secondary air and preventing heat transfer by convection.

4,541,408

FIRE-GUARD

John B. Ratelband, Utrechtsestraat 55-34 Rynstateflat, 6811 LV Arnhem, Netherlands

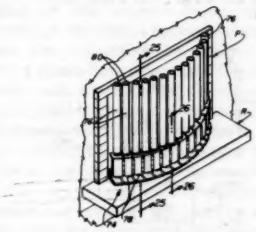
Continuation of Ser. No. 303,880, Sep. 21, 1981, abandoned, which is a continuation-in-part of Ser. No. 086,768, Oct. 22, 1979, abandoned, which is a division of Ser. No. 105,566, Dec. 20, 1979, Pat. No. 4,304,216. This application Aug. 20, 1984, Ser. No. 642,697

Claims priority, application Netherlands, May 14, 1979, 7903778

The portion of the term of this patent subsequent to Nov. 1, 2000, has been disclaimed.

Int. Cl.⁴ F24B *7/00*

U.S. Cl. 126—121 **2 Claims**



1. A method for converting radiation heat into convection heat using a fire-guard placed on a surface adjacent to source of radiant energy located in a room to be heated by the radiant energy source, comprising:

providing a plurality of substantially straight, vertically extending pipes, each of said pipes having an inlet located adjacent to a bottom portion of each of said pipes and an outlet located adjacent to a top portion of each of said pipes;

providing a threshhold means for each of said pipes for communication with each of said pipes;

interconnecting at least two of said pipes using hinge means so that said two of said pipes are pivotal about a vertical axis;

supporting said pipes using said threshhold means;

contacting and supporting said threshhold means directly on the surface that is adjacent to the source of radiant energy;

using said threshhold means to form a barrier along the width of the fire-guard to the passage of relatively cool air;

locating each of said pipe inlets on a side of said threshhold means away from the source of radiant energy;

receiving relatively cool air into said pipes in a first direction using said pipe inlets;

directing the relatively cool air using said threshhold means in a second direction, different from the first direction, upwardly through said pipes;

preventing substantially all relatively cool air from passing through said threshhold means so that substantially all of the cool air passes into said pipe inlets;

heating the relatively cool air received in said pipes; and

permitting heated air to pass from said outlets of said pipes into the room.

4,541,409

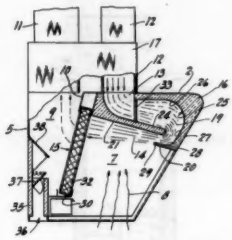
BACKSHELF COMPENSATING EXHAUST HOOD APPARATUS

Daniel Karst, Beaver Dam; Gary Strege, Watertown, and E. Richard Larsen, Horicon, all of Wis., assignors to Maysteel Corp., Mayville, Wis.

Filed Jun. 6, 1984, Ser. No. 617,725

Int. Cl.⁴ F24C *15/20*

U.S. Cl. 126—299 D **9 Claims**



1. A compensating back-shelf exhaust hood comprising a hood enclosure having a top wall means and a partially enclosing side wall means arranged to form an open-bottom exhaust chamber and having an opening in the side wall means for access into the enclosure, an air supply channel means having a first portion extending through the top wall means and receiving forced air and directing the air received to the front of said top wall means along a substantial portion of the length of said top wall means; deflector means at the forward portion of said top wall means for deflecting the air from said air supply channel at the front of said top wall means backwardly, a discharge slot means coupled to said deflector means and directing said air rearwardly and substantially horizontally toward said back wall as a stream of air across the upper end of said enclosure and the top portion of said open-bottom exhaust chamber, exhaust passageway means associated with said hood enclosure, and a filter means defining the back wall of the exhaust chamber and canted forwardly at an angle from the vertical with the upper end of the filter means located forwardly of the lower end toward said opening in the side wall means such that the air directed substantially horizontally and rearwardly from said slot means strikes the upper portion of said filter means approximately perpendicularly to the filter.

4,541,410

APPARATUS AND METHOD FOR BURNING A COMBUSTIBLE GAS, AND A HEAT EXCHANGER FOR USE IN THIS APPARATUS

Subhash C. Jatana, Upper Arlington, Ohio, assignor to Columbia Gas System Service Corporation, Columbus, Ohio

Filed Jul. 20, 1983, Ser. No. 515,642

Int. Cl.⁴ F24H *1/00*

U.S. Cl. 126—362 **15 Claims**

1. Apparatus for burning a combustible gas comprising:

a housing having walls defining a liquid chamber capable of holding liquid;

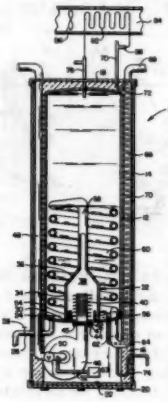
a cylindrical combustion chamber sealed except for a gas inlet and a frustoconical outlet for combustion products, said combustion chamber being disposed within said liquid chamber and having liquid-impervious walls;

an exhaust conduit having an inlet connected to the small end of the frustoconical outlet of said combustion chamber and an exhaust outlet through which combustion products can leave said conduit, said conduit being of

substantially uniform cross-section from its inlet to its exhaust outlet;

a gas burner disposed within said combustion chamber and in fluid communication with said gas inlet, said gas burner having walls defining an internal chamber and apertures passing through said walls, thereby establishing fluid communication between said internal chamber of said gas burner and said combustion chamber outside said gas burner; and

an impeller means for urging a combustible mixture of a combustible gas and air through said gas inlet into said internal chamber of said gas burner, means for controlling the ratio of gas and air in the range 1–1.2 times the amount of air to completely burn the gas,



said apertures in said gas burner being sized such that combustion of said combustible mixture within said combustion chamber outside said gas burner will not cause ignition of said combustible mixture within said internal chamber of said gas burner,

the housing being surrounded by an insulating jacket which in turn is surrounded by an outer housing,

said exhaust conduit comprises a first heat exchanger for being immersed in liquid in said liquid chamber for effecting heat exchange between the combustion products produced by combustion of said combustible mixture and the liquid in said liquid chamber, said first heat exchanger being disposed within said liquid chamber and comprising a riser section extending upwardly from said small end of the frustoconical outlet and a helical section extending downwardly from said riser section to said exhaust outlet.

4,541,411

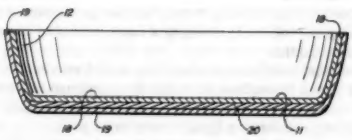
GRAPHITE COMPOSITE COOKWARE

Lawrence D. Woolf, Carlsbad, Calif., assignor to GA Technologies Inc., San Diego, Calif.

Filed Jul. 10, 1984, Ser. No. 629,356

Int. Cl.⁴ A47J *27/00*

U.S. Cl. 126—390 **4 Claims**



1. Multi-ply cookware having an inner surface for contacting the food to be cooked therein and an outer surface contacting the heat source comprising, in combination, an inner ply; an outer ply; and an intermediate ply in the heating region of the cookware of a thermally anisotropic graphite material, the intermediate ply being encased by the inner and outer plies and being oriented with its carbon layers being parallel to the surface of the cookware so that its thermal conductivity is higher in the plane parallel to the surface of the cookware than in the direction perpendicular to the surface.

4,541,412

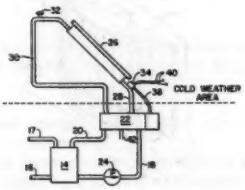
CHECK VALVE AND SPRING TO PREVENT FORWARD AND REVERSE THERMOSIPHONING IN SOLAR COLLECTOR SYSTEMS

David P. Bagshaw, Redwood City; Michael A. Kast, Menlo Park, and Harry T. Whitehouse, Redwood City, all of Calif., assignors to Sunspool Corporation, Menlo Park, Calif.

Continuation of Ser. No. 236,099, Feb. 22, 1981, abandoned, which is a continuation-in-part of Ser. No. 960,399, Nov. 13, 1978, Pat. No. 4,280,478. This application Feb. 16, 1983, Ser. No. 466,818

Int. Cl.⁴ F24J *3/02;* **F16K** *15/04*

U.S. Cl. 126—419 **3 Claims**



1. The method of preventing forward and reverse thermosiphon flow in a solar collector system including a solar collector array, a storage tank and an input line for passing fluid from said tank to said collector array and an output line for passing fluid from said collector array to said storage tank, said method comprising

placing a check valve in either said input line or said output line of said solar collector, said check valve comprising a chamber with a ball contained therein, said chamber possessing an inlet port and an outlet port and a ball seat at the inlet port to said chamber;

providing spring means mounted in said chamber adjacent to the outlet port to contact said ball for forcibly pressing said ball against said ball seat at said inlet port to said chamber so as to block said inlet port during the times fluid is not being pumped through said valve;

selecting a spring force of said spring means to be applied to said ball to be sufficiently high and at a selected level to prevent the flow of fluid by forward thermosiphoning of fluid from the storage tank through the collector array and back to the storage tank and to hold said ball against said seat during the times the fluid is not being pumped through said check valve thereby to also prevent reverse thermosiphoning of fluid from the storage tank through the collector array and back to the storage tank;

and selecting said spring force to be sufficiently low to place a relatively small pressure drop in the flow of fluid in the forward direction through said system during the pumping of fluid through said valve.

4,541,413

PUMP AND CONTROL UNIT FOR A SOLAR HEATING INSTALLATION FOR A WATER TANK, AND PARTICULARLY FOR A SWIMMING POOL

Guy Cannaux, Antibes, and Gerard Calvet, Valbonne, both of France, assignors to Compagnie Francaise de Raffinage, Paris, France

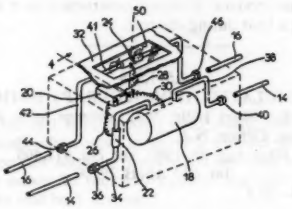
PCT No. PCT/FR83/00142, § 371 Date Mar. 8, 1984, § 102(e) Date Mar. 8, 1984

PCT Filed Jul. 8, 1983, Ser. No. 597,069

Claims priority, application France, Jul. 9, 1982, 82 12061

Int. Cl.⁴ F24J *3/02*

U.S. Cl. 126—422 **9 Claims**



1. A pump and control unit for a solar heating installation for a water tank, such as for a swimming pool, said installation having at least one solar collector for converting the energy from solar radiation into heat, a hydraulic circuit containing an outward-flow pipe connecting the tank to the inlet of the collector and a return-flow pipe connecting the outlet of the collector to the tank, a pump which circulates the water from the tank through said hydraulic circuit, and a derivative-action control unit which is electrically connected to the pump and to two sensors mounted on the outward-flow pipe and on the return-flow pipe, respectively; said unit comprising said pump, derivative-action control unit and two sensors all contained in a single opaque case which is traversed by a section of said outward-flow pipe and a section of said return-flow pipe and which is provided in its top wall with a transparent opening through which said sensor on the section of return-flow pipe can be insolated, said section of return-flow pipe which carries the return-flow sensor being in the form of an arch or of an inverted U, the sensor being mounted on the central portion of said arch and extending just below said opening.

4,541,414

APPARATUS FOR COLLECTING SUNLIGHT

Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan

Continuation of Ser. No. 368,746, Apr. 15, 1982, abandoned. This application Jul. 23, 1984, Ser. No. 633,076

Int. Cl.⁴ F24J *3/02*

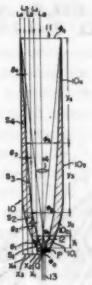
U.S. Cl. 126—438 **8 Claims**

1. A sunlight collector used, in particular, for collecting diffuse radiation of sunlight comprising:

a cylinder having a relatively wide entrance aperture, for receiving the parallel components of diffuse radiation which are parallel to the longitudinal axis of the cylinder, and a relatively narrow circular exit aperture, for introducing concentrated diffuse radiation in said cylinder into a light conductor;

an inner wall of said cylinder having a countable number of discrete conical surfaces contiguously arranged in series along the axis of the cylinder and having substantially a total reflection surface on each of said conical surfaces, each of said surfaces being linear when viewed in longitudinal cross-section; and

the angle of each of said conical surfaces is increased from the top to the bottom of the cylinder, so that the incident diffuse radiation from said entrance aperture is reflected on said tapered surfaces and concentrated into



said exit aperture for introduction into said light conductor.

4,541,415

SOLAR RAY COLLECTING DEVICE

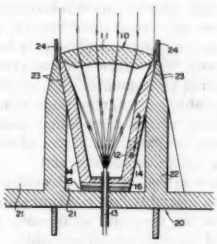
Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan

Filed Mar. 23, 1984, Ser. No. 592,690

Claims priority, application Japan, Jun. 3, 1983, 58-99978

Int. Cl.⁴ F24J *3/02;* **G02B** *7/02*

U.S. Cl. 126—440 **16 Claims**



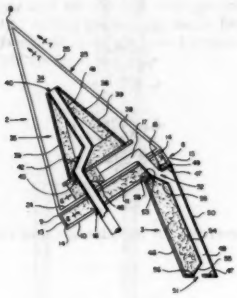
1. A solar ray collecting device comprising a supporting member, a plurality of recess means in said member, a pyramid means disposed in each of said recess means, said pyramid means having a bottom wall and side walls extending from said bottom wall, said side walls of said pyramid means generally slope outwardly form said bottom wall and having end portions defining a pyramid opening, a focusing lens disposed in said pyramid opening, an optical conductor extending through said bottom wall and having a light-receiving surface within said pyramid means, said light-receiving surface being disposed at the focus of said lens such that solar rays focused by said lens are guided into said optical conductor, and mounting means on said side walls of said pyramid means and on said lens for mounting said lens on said pyramid opening to provide for relative movement between said lens and said pyramid means while maintaining the focus of said lens on said light-receiving surface, whereby the solar ray device effectively collects solar rays under conditions where the lens moves relative to the pyramid means due to temperature changes.

4,541,416

SOLAR ENERGY COLLECTION SYSTEM

Robert W. Leininger, 202 Willow Dr., and Richard G. Decker, 103 Baybridge Rd., both of North Cape May, N.J. 08204

Filed Oct. 29, 1982, Ser. No. 437,664
Int. Cl.[4] F24J *3/02*
U.S. Cl. 126—450 **3 Claims**



1. A solar collector comprising:

(a) a pyramid-shaped enclosure including an insulated base and four triangular sides attached to and between the base and each other;

(b) a pair of communicating apertures extending through the base and into central portions of the enclosure;

(c) means for receiving solar radiation and for converting received solar radiation into heat, operatively associated with the sides of the enclosure; and

(d) distribution means, operatively associated with the enclosure and including means for routing air as a heat transfer medium between the communicating apertures of the base of the enclosure and the solar radiation receiving means whereby solar radiation is transferred, in the form of heat, to the air routed therethrough, said distribution means including a distribution assembly located within the central portions of the enclosure and comprising:

(i) a base including a communicating aperture therethrough, and four essentially triangular sides attached to and between the base of the distribution assembly and each other, wherein the exterior surfaces of said sides are provided with a reflective coating; and

(ii) duct means extending through central portions of the distribution assembly and communicating between the aperture of the base and an opening provided at the pinnacle of the distribution assembly;

wherein the base and sides of the distribution assembly are spaced from the base and sides of the enclosure of the solar collector so that the air received from a first one of the apertures of the base of the enclosure is passed between the distribution assembly and the enclosure of the solar collector and received through the opening in the pinnacle of the distribution assembly for delivery via the duct means to the aperture of the distribution assembly.

4,541,417

CORONARY AUGMENTER

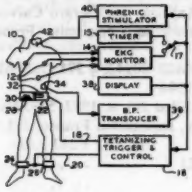
Paul P. Krikorian, Spring Valley Rd., Morristown, N.J. 07960

Filed Jun. 7, 1982, Ser. No. 385,471
Int. Cl.[4] A61B *5/04*
U.S. Cl. 128—1 D **12 Claims**

1. A coronary blood flow augmenter for affecting blood flow in a patient, comprising:

timing means for repetitively producing a trigger signal in response to a patient's heart beat; and

stimulating means for repetitively applying to a patient a stimulating current size to involuntarily contract and relax at least one muscle in a patient in response to said trigger signal, and stimulating current being timed by said timing



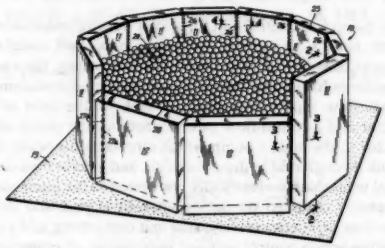
means to produce muscular contraction in a muscle excluding a heat during diastole.

4,541,418

SIMULATED HYDROTHERAPY BATH

John R. Kirby, Short Hills, N.J., assignor to J. A. Preston Corporation, Clifton, N.J.

Filed Aug. 25, 1982, Ser. No. 411,405
Int. Cl.[4] A61H *29/00*
U.S. Cl. 128—24.1 **18 Claims**



1. A simulated bath comprising in combination a plurality of panels, each of said panels being formed of a foam substrate and an outer upholstered outer layer, each of said panels including fastening means for permitting said panels to be releasably secured together to define a free-standing soft-sided enclosure whereby a selected number of panels may be releasably secured together to vary the size of the free-standing enclosure and a plurality of flexible, crushable shape retentive balls disposed in said enclosure, said balls being sufficiently large to prevent said balls from being ingested by a child.

4,541,419

SURGICAL CORSET

Masakazu Osawa, 34-14, Kameido 9-chome, Koto-ku, Tokyo-to, Japan

Continuation of Ser. No. 465,905, Feb. 14, 1984, abandoned, which is a continuation of Ser. No. 343,757, Jan. 28, 1982, abandoned, which is a continuation of Ser. No. 191,994, Sep. 29, 1980, abandoned, which is a continuation of Ser. No. 86,710, Oct. 22, 1979, abandoned, which is a continuation of Ser. No. 852,747, Nov. 8, 1977, abandoned. This application Jun. 18, 1984, Ser. No. 621,671
Claims priority, application Japan, Nov. 20, 1976, 51-139914
Int. Cl.[4] A61F *5/02*
U.S. Cl. 128—78 **8 Claims**

1. A surgical corset comprising:

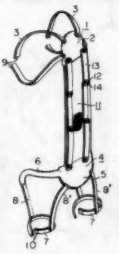
a shoulder section to be applied to the shoulders, and having shoulder fitting bands;

a waist section to be applied onto the waist, said waist section having side margins both of which extend forward to form forward supporting portions;

a back section to be applied onto the back, said back section

connecting a lower portion of said shoulder section and to said waist section;

elongated elastic members, each having a length corresponding to an aliquot of the whole length of said back section, and placed on an outer face of and along both



sides of said back section, said elastic members being longitudinally elastic to exert a vertical tractive force between the shoulder section and the waist section; and

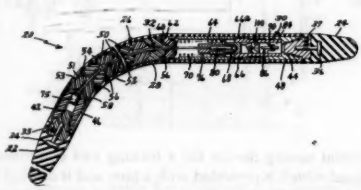
fastener means for removably connecting said elastic members to said back section.

4,541,420

PENILE PROSTHESIS UTILIZING PATIENT CONTROLLED CAM ACTUATOR APPARATUS

Gerald W. Timm, San Juan Capistrano, Calif.; Richard A. Helms, Elk River, and Donald L. Sandford, Lauderdale, both of Minn., assignors to Dacomed Corporation, Minneapolis, Minn.

Filed Apr. 26, 1984, Ser. No. 604,022
Int. Cl.[4] A61F *5/00*
U.S. Cl. 128—79 **7 Claims**



1. A penile prosthesis, comprising:

(a) an elongated cylindrical body having a longitudinal axis and further having a distal end portion and a proximal end portion, said elongated cylindrical body including an outer elongated sheath formed from a physiologically inert and pliable material;

(b) an articulated column of radiused segments disposed intermediate of said distal end portion and said proximal end portion, adjacent ones of said segments cooperating to form slidable joints between said adjacent ones of said segments;

(c) an elongated tension member extending longitudinally of said elongated cylindrical body, said tension member being fixed against longitudinal movement at a first end, said articulated column being axially journaled about said tension member;

(d) an actuator apparatus disposed intermediate of said articulated column and one of said distal and proximal end portions, said actuator apparatus including a longitudinally slideable cam member and a cam follower member pivotally mounted and fixed against longitudinal movement at a first end, said cam member being disposed intermediate of said articulated column and said cam follower member, said cam member being biased toward said cam follower member by a biasing member disposed intermediate of said articulated column and said cam member, said cam member being interconnected to a second end of said tension member, said cam member having a ramp configuration providing for one way travel along said ramp configuration by a second end of said cam follower member; and

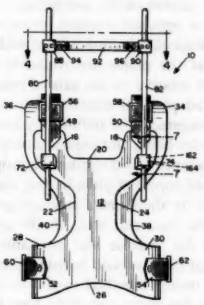
(e) said tension member cooperating with said cam member to displace said cam member longitudinally away from said cam follower member when the prosthesis is bent so as to place said tension member in sufficient tension to overcome said biasing member, whereby said cam member is moved longitudinally away from said cam follower member, said member moving longitudinally toward said cam follower member upon termination of the bending action so as to alternately come to rest at a first or second relative longitudinal displacement from the first end of said cam follower member, said first relative longitudinal displacement being greater than said second relative longitudinal displacement, said tension member having less tension when said cam follower member and said cam member are longitudinally displaced by said first longitudinal displacement than when said cam follower member and said cam member are longitudinally displaced by said second longitudinal displacement.

4,541,421

HALO FIXATION SYSTEM

Alfred A. Iversen, and William J. Eastman, both of Hopkins, Minn., assignors to PMT, Inc., Hopkins, Minn.

Filed Apr. 3, 1984, Ser. No. 596,392
Int. Cl.[4] A61H *1/02*
U.S. Cl. 128—87 B **10 Claims**



1. Halo fixation system for a patient comprising:

a. front and back opposing jackets configured to conform to the front and back surfaces of a patient's body, and a plurality of adjustable straps and locking buckles in between for securing said front and back jacket together;

b. ball and socket means secured to upper areas of said front and back jackets;

c. rods extending through each of said ball and socket means upwardly, a ball for each ball and socket means surrounding each of said rods in a free-floating relationship;

d. elevational assembly means including ball and socket means at each end, each of said ball and socket means secured to each of said rods, a ball for each of said ball and socket means surrounding each of said rods in a free-floating relationship; and,

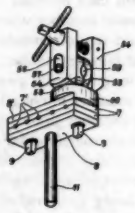
e. halo ring secured to each of said elevational assembly means, said halo including a plurality of skull pins for securing to a patient's skull.

4,541,422

FUNCTIONAL ATTACHMENT SYSTEM FOR OSTEOSYNTHESIS

Juan L. de Zbikowski, Virgen de la Antigua, 10-1°, Sevilla, Spain

Filed Dec. 9, 1982, Ser. No. 448,330
Claims priority, application Spain, Dec. 9, 1981, 507.799
Int. Cl.⁴ A61F *5/04*
U.S. Cl. 128—92 A **1 Claim**



1. An improved functional attachment system for osteosynthesis of the type having transfixion studs inserted into the fragments on each side of a fractured bone, holding means cooperating with the studs and sliding telescopic bars cooperating with the holding means for anchoring the fragments on each side of the fracture, with the holding means being articulated joints connecting the telescopic bars to jaws, the jaws holding the transfixion studs, wherein the improvements comprise:

(a) the jaws for holding transfixion studs having an upper plate attached to one of the jaws; and

(b) the upper plate has a device for holding the telescopic bars having:

(i) a circular housing defining a concave cavity, with a circular groove in the cavity,

(ii) a pair of opposed housing plates, each plate having a flange adapted for cooperation with the cavity groove such that the plates are rotatable in the groove and captured relative to the axis of rotation, and a convex surface adapted for contact with the housing cavity,

(iii) an elongated hole defined by each plate, said elongated holes being slot means which permit rapid parallel alignment of said sliding telescopic bars,

(iv) a pair of opposing disks having diametrically opposed channels on their inner faces adapted for receipt of a telescopic bar, and stub shafts on their outer faces adapted for slidable and rotatable insertion into the elongated holes of said housing plates; and

(v) screw means attached to the two housing plates for drawing the plates and disks together, thereby rigidly positioning a telescopic bar relative to the device for holding the transfixion studs.

4,541,423

DRILLING A CURVED HOLE

Forest C. Barber, 2925 Race St., Fort Worth, Tex. 76111

Filed Jan. 17, 1983, Ser. No. 458,625
Int. Cl.⁴ A61F *5/04*
U.S. Cl. 128—92 E **16 Claims**

1. An attachment for a rotary motor for drilling curved holes in bone tissue comprising

an elongated flexible drive shaft havaing a proximal end configured to be coupled to a rotary drive motor, and having a rotary drilling tool fixed to the distal end of the drive shaft;

a semi-rigid tubular sheath, intentionally manually deformable to a selected curvature by the user, enclosing and guiding said flexible drive shaft and adapted to be non-rotatably coupled at one end to said rotary drive motor; said drilling tool having an outer diameter slightly larger than that of said sheath; and said shaft proximal end being

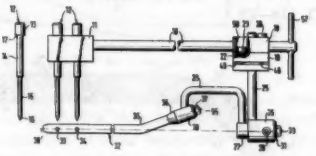
dimensioned to pass through said sheath to enable removal of said drilling tool and shaft from said sheath.

4,541,424

DISTAL AIMING DEVICE FOR A LOCKING NAIL

Arsene Grosse, Strassbourg, France; Hans E. Harder, Probsteierhagen, and Jürgen Klietz, Kiel, both of Fed. Rep. of Germany, assignors to Howmedica International, Inc., Kiel, Fed. Rep. of Germany

Filed Feb. 14, 1983, Ser. No. 466,290
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1982, 8208970[U]
Int. Cl.⁴ A61B *17/00*
U.S. Cl. 128—92 EB **10 Claims**



7. A distal aiming device for a locking nail comprising an aiming head which is provided with a bore and is carried by an elongated aiming head retaining means, a nail holding means for detachably receiving the proximal end of the locking nail, a holding arm connected to the nail holding means and capable of rotation about the longitudinal axis of the locking nail being held in the nail holding means, with said holding arm including an integral sleeve, a cylindrical structural component of the locking nail holding means being rotatably supported within said sleeve and said aiming head retaining means being releasably fitted on the holding arm and being capable of reciprocating displacement relative to the holding arm and the nail holding means in a direction parallel with the longitudinal axis of the nail, an adjusting pin capable of being received by the aiming head within said bore in a direction normal to the longitudinal axis of the locking nail, and means to releasably lock said sleeve to said cylindrical structural component.

4,541,425

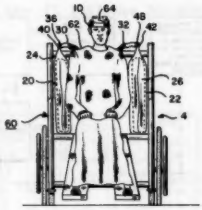
HEAD AND TORSO RESTRAINT

Arthur M. Yetter, Jr., 100 Maple Shade Ave., Trenton, N.J. 08610

Filed Jan. 19, 1984, Ser. No. 572,194
Int. Cl.⁴ A61F *13/00*
U.S. Cl. 128—134 **8 Claims**

1. In combination with a chair having arm supports, a human

head and torso restraint for supporting a user's head and torso while seated in said chair comprising means for limiting forward flexion movement being attached to said chair, means for limiting lateral flexion of the user's torso, said means for limiting lateral flexion of the user's torso being attached to said chair, said means for limiting lateral flexion of the user's torso further comprising a left means for limiting left lateral flexion



in combination with a right means for limiting right lateral flexion, wherein said left and right means each comprises a pillow covered by a pillow case placed adjacent a side of the user in between the user and an arm support and having a means for interconnecting each said pillow case and said chair whereby lateral flexion of a user's torso is restrained by said pillow.

4,541,426

DRESSING

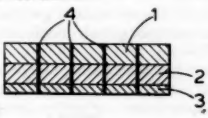
David F. Webster, Bishops Stortford, England, assignor to Smith & Nephew Associated Companies p.l.c., England

Filed Apr. 3, 1984, Ser. No. 596,260

Claims priority, application United Kingdom, Apr. 6, 1984, 8309342

Int. Cl.⁴ A61F *15/00*

U.S. Cl. 128—156 **40 Claims**



1. A dressing suitable for application to lesions of the skin which dressing comprises a conformable film having apertures therethrough which open and close said film comprising a first layer for contacting the lesion laminated to a second layer, said first layer comprising a material which when in contact with water swells and said second layer comprising a material which when in contact with water does not swell or swells less than said first layer whereby when in contact with a wet lesion the apertures open allowing water to pass through the film and when in contact with a dry surface the apertures are closed.

4,541,427

SURGICAL INSTRUMENT ASSEMBLY

Walter Koss, Industriestrasse, 6222 Geisenheim, Fed. Rep. of Germany

Filed Jun. 24, 1983, Ser. No. 507,693

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1982, 8218440[U]

Int. Cl.⁴ A61F *17/32*

U.S. Cl. 128—305.3 **19 Claims**

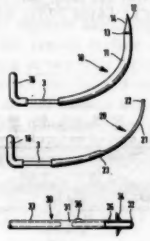
1. A surgical instrument assembly for making a cavity for receiving a larynx prosthesis, comprising:

a curved puncture needle,

said needle having a tip at one end, a curved central portion and a gripping means at the other end;

a prosthesis place holder,

said place holder comprising an elastomer having a main cylindrical body portion, a compressible securing portion disposed thereon, and a guide passage extending within



said main body portion and being accessible from the exterior through an opening, and

a placing needle,

said placing needle having a rounded end portion, a curved shank portion and a grip means at the other end.

4,541,428

CUTICLE CUTTING TWEEZERS WITH PROGRESSIVE CUTTING EDGE ENGAGEMENT

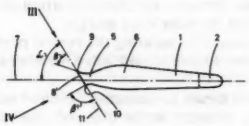
Hans Scherrer, Engelgasse 47, CH-4052 Basel, Switzerland

Filed Feb. 22, 1983, Ser. No. 468,667

Claims priority, application Switzerland, Mar. 4, 1982, 1336/82

Int. Cl.⁴ A61F *17/32*; A61B *17/30*

U.S. Cl. 128—305 **4 Claims**



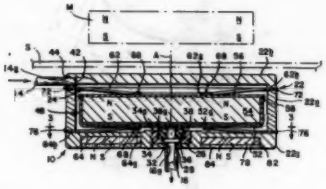
1. Cuticle cutting tweezers having a pair of elongate mirror image shaped tweezer legs respectively located on both sides of a plane of symmetry, being connected to one another at one end, resiliently closable together at the other end by movement in a direction substantially perpendicular to said plane, and each provided at said other end with a tweezer jaw comprising a cutter with an outer cutter surface intersecting with an inner cutter surface at an acute angle to form a cutter edge, said cutter edge extending generally transversely of said direction and being inclined at an angle of 50°–70° relative to a plane which is normal to said plane of symmetry and passes substantially through said ends, the tweezer jaws tapering toward one end of the cutter edge to intersect therewith at an angle of 35°–55° to form a cutter tip, the outer and inner cutter surfaces being formed so that as a closing force is applied to the legs to cause the cutter edges to approach one another, the cutter edges rest on one another at first only at the cutter tips, diverging from said tips with a gap that closes upon a further progressive increase in said force, butting flush against one another when the tweezers are in the completely closed state.

4,541,429

IMPLANTABLE MAGNETICALLY-ACTUATED VALVE

Frank R. Prosl, Duxbury; James G. Skakoon, Norwood; Gerard S. Carlozzi, Pembroke, all of Mass., and Infusaid Corporation, 02, Norwood, Mass.

Filed May 10, 1982, Ser. No. 376,686
Int. Cl.[4] A61M *29/00*; A61F *1/00*
U.S. Cl. 604—249 **8 Claims**



1. A miniature implantable valve, said valve having

A. a wafer-like housing defining a cavity,

B. a first passage through a wall of the housing,

C. a second passage through a wall of the housing,

D. a valve seat formed in the housing between said passages,

E. a movable ferromagnetic valve member positioned in the housing cavity,

F. means for suspending the valve member within the cavity so that it is movable along a valve axis between a first position wherein it engages the valve seat and isolates said passages and a second position wherein the valve member is spaced away from the valve seat to permit fluid flow between said passages, said suspending means including

1. a pair of substantially flat, wafer-like spiral spring members, each said spring member being relatively flexible in the direction perpendicular to the plane of the spring member but relatively stiff in the lateral direction in the plane of the spring member, and comprising a flat resilient plate having a plurality of substantially parallel narrow, equal-width spiral slits extending between the central portion of the plate and the outer edge margin thereof so as to form a plurality of flat spiral spring legs which are closely spaced and parallel along their entire lengths between the central portion of the spring member and its outer edge margin,

2. first means for securing the central portion of the spring member to one of said valve member and said housing, and

3. second means for securing the outer edge margin of the spring member to the other of said valve member and said housing so tht the valve member has a single degree of freedom of movement along the valve axis toward or away from the valve seat, and

G. means for biasing the valve member toward one of said positions said biasing means comprising a ferromagnetic body mounted to the valve housing, at least one of said valve member and said body being axially polarized so as to produce a magnetic force which urges the valve member toward said one position.

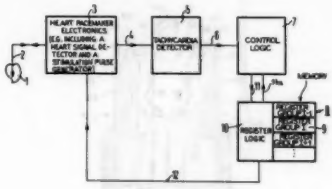
4,541,430

METHOD AND A HEART PACEMAKER FOR TERMINATING A TACHYCARDIA

Hakan Elmqvist, Bromma, and Hans Strandberg, Sundbyberg, both of Sweden, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 28, 1983, Ser. No. 546,457
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1982, 3240430
Int. Cl.[4] A61N *1/36*
U.S. Cl. 128—419 PG **18 Claims**

1. A heart pacemaker for supplying sequences of stimulation pulses for effecting termination of a sensed tachycardia, said pacemaker comprising at least a signal detector, a controllable stimulation pulse generator for generating stimulation pulses with a controllable time interval, and a tachycardia detector, and further comprising a memory with a plurality of register means constructed for storing respective register values controlling generation of respective sequences of n stimulation pulses, said register means during pacemaker operation serving to store register values corresponding to respective sequences


HEART PACEMAKER ELECTRONICS (E.G. INCLUDING A HEART SIGNAL DETECTOR AND A STIMULATION PULSE GENERATOR)
TACHYCARDIA DETECTOR
CONTROL LOGIC
MEMORY
REGISTER LOGIC

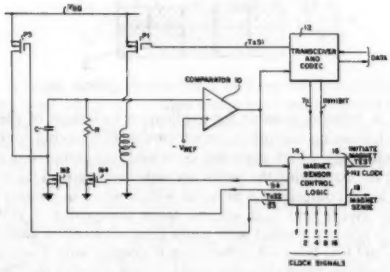
that are effective for the termination of a tachycardia and thereafter to supply the stored, register values during a subsequent tachycardia to control the generator to again supply the corresponding sequence, and control logic means coupled with said tachycardia detector for activation in response to a tachycardia and controlling selection of the respective register means to selectively effect the supply of the respective stored register values for the corresponding control of said generator.

4,541,431

USE OF TELEMETRY COIL TO REPLACE MAGNETICALLY ACTIVATED REED SWITCH IN IMPLANTABLE DEVICES

Ibrahim H. Ibrahim, North Ryde, and Christopher N. Daly, Bilgola Plateau, both of Australia, assignors to Telectronics Pty. Ltd., Lane Cove, Australia

Filed Sep. 20, 1984, Ser. No. 652,290
Int. Cl.[4] A61N *1/36*
U.S. Cl. 128—419 PT **14 Claims**



1. A combined telemetry system and magnetic field sensor for use in an implantable medical device comprising a tuned circuit including inductor means and capacitor means, telemetry logic means for controlling the application of energizing pulses to said inductor means when operating in a transmit mode and for sensing potentials across said inductor means when operating in a receive mode, said tuned circuit having a resonant frequency which varies with the strength of an external magnetic field which passes through said inductor means, and means for periodically sensing the presence of a magnetic field passing through said coil, said sensing means including means for applying an energizing signal to said tuned circuit for a predetermined time interval, means for defining a sensing window which begins and ends at predetermined times following energization of said tuned circuit, and means for detecting the manner in which the signal level at a selected point in said

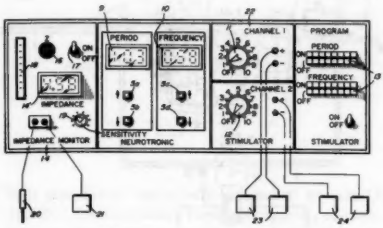
tuned circuit relates to a threshold level during said sensing window.

4,541,432

ELECTRIC NERVE STIMULATOR DEVICE

Pedro Molina-Negro, Montreal, and Roger Garceau, Pierrefonds, both of Canada, assignors to Neurotronic Ltee, Montreal, Canada

Filed Dec. 17, 1982, Ser. No. 450,722
Int. Cl.[4] A61N *1/36*
U.S. Cl. 128—421 **12 Claims**



1. An electric nerve stimulating device for suppression of organic pain in a body, comprising:

pulse generating means for producing bipolar rectangular waveforms at a preselected repetition rate and of a preselected width during a given first time period;

means connected to said pulse generating means to deliver rectangular waveforms at a repetition rate and width which is chosen by a pseudo-random function and different from said preselected rate and width of said bipolar rectangular waveforms, for a second time period;

means connected to said pulse generating means for inhibiting delivery of pulse waves for a third time period different from said first and second time period, thereby substantially eliminating noxious sensations and adaptation of nerve cell to stimulation during suppression of the organic pain;

means connected to said pulse generating means to gradually increase the amplitude and width of said bipolar rectangular waveforms according to a start ramp-mode;

feedback means connected to said pulse generating means to stabilize the amplitude of said bipolar and random rectangular waveforms; and

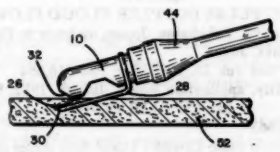
means connected to said pulse generating means to apply said waveforms to nerve fibers to be stimulated thereby.

4,541,433

CARDIAC OUTPUT MONITOR

Michael D. Baudino, Coon Rapids, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Jun. 1, 1984, Ser. No. 616,366
Int. Cl.[4] A61B *5/02, 10/00*
U.S. Cl. 128—668 **5 Claims**



1. A biomedical transducer for mounting to the wall of a blood vessel, comprising:

a transducer head having a proximal end, a distal end, and a ventral surface;

a transducer, mounted to said transducer head;

two fixation wires each having a first segment extending from said ventral surface of said transducer head for a first distance less than the thickness of the wall of said blood vessel and a second segment extending for a second distance, parallel to the ventral surface of said transducer head and terminating in ventrally facing bevels, wherein said second segments of said fixation wires extend distal to said first segments of said fixation wires and extend from the distal end of said transducer head for a distance less than the thickness of the wall of said blood vessel; and

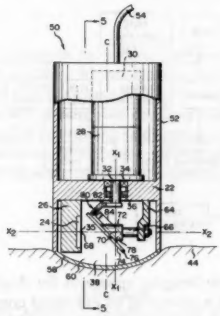
a transducer lead means coupled to the proximal end of said transducer head, for coupling said transducer to monitoring equipment.

4,541,434

ULTRASONIC SCANNING APPARATUS

Takeshi Okado, Tochigi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 1, 1983, Ser. No. 510,305
Claims priority, application Japan, Jul. 2, 1982, 57-113856
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—660 **6 Claims**



1. An ultrasonic scanning apparatus comprising:

a housing of generally cylindrical shape extending along a first axis thereof, said housing having an ultrasonic energy transmissive window at a first end thereof;

a motor means, disposed in said housing, for continuously rotating an output shaft thereof elongated toward said window along said first axis;

supporting member means disposed between said motor means and said window for swingably holding a mirror rotating shaft elongated along a second axis perpendicular to said first axis;

a swinging means, coupling said output shaft of said motor means with said mirror rotating shaft, for converting the continuous rotation of said output shaft into a swinging motion of said mirror rotating shaft, said swinging means having an arm with a first arm end connected to the motor output shaft so as to rotate therewith, and a fork member having a first end pivotably mounted to a second end of the arm and a second end journaled to the mirror rotating shaft to be rotatable to a third axis which passes said first and second axes at right angles to the said second axis the movement of said fork member defining a cone;

an ultrasonic reflector attached on an end of said mirror rotating shaft at an acute angle to the transmissive window; and

transducer means, opposite to said reflector, for projecting an ultrasonic beam toward said reflector along said second axis, said reflector reflecting said ultrasonic beam toward

said window, the beam being steered in a sector plane perpendicular to said second axis.

4,541,435

ULTRASONIC IMAGING APPARATUS

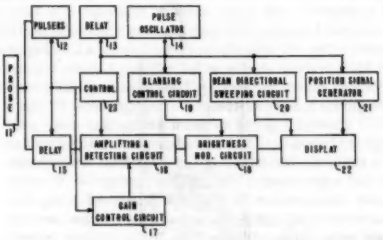
Kazuyoshi Saito, Yaita; Taketoshi Iida, Tochigi; Toshio Shirasaka, Tochigi, and Yasuhiko Takemura, Tochigi, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 238,850, Feb. 27, 1981, abandoned. This application Oct. 28, 1983, Ser. No. 546,079

Claims priority, application Japan, Feb. 28, 1980, 55-24416

Int. Cl.[4] A61B *10/00*

U.S. Cl. 128—660 **11 Claims**



1. An ultrasonic imaging apparatus for displaying a tomographic image of a subject to be examined comprising:

means for emitting directed acoustic wave beams of various focusing distances into a subject;

beam control means coupled to said emitting means for directing at least a series of acoustic wave beams, each series including at least two consecutive wave beams having a common axis but substantially different respective focusing distances from said emitting means;

means for receiving the reflected wave beams corresponding to each of the consecutive wave beams of a series;

receiver control means coupled with said receiving means for controlling the duration of time the receiver means receives the reflected wave beams so that the duration of reception of at least one of said consecutive acoustic wave beams in a series is different;

modulating means coupled to said receiving means for generating modulated scanning lines corresponding to each of the received reflected wave beams of a series;

display control means coupled with said modulating means for composing the modulated scanning lines corresponding to each of the consecutive wave beams of a series into a single image scanning line, said display control means including (i) means for unblanking the portions of each said respective modulated scanning line that corresponds to the respective range of focusing distance of each of said consecutive acoustic beams and for blanking the remaining portions, if any, and (ii) means for composing said unblanked portions of the consecutive acoustic beams of each series into a single image scanning line; and

display means coupled with said display control means for displaying a tomographic image of the subject.

4,541,436

ULTRASONIC TOMOGRAPHY DEVICE

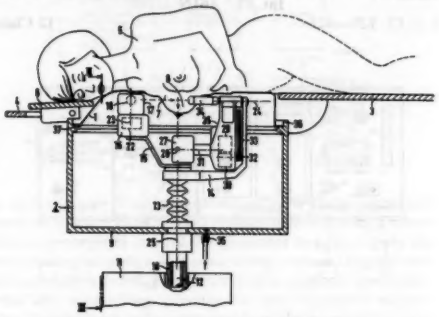
Dieter Hassler, Uttenreuth, and Wolfgang Mittelstaedt, Neunkirchen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 4, 1983, Ser. No. 520,387

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1982, 3230897

Int. Cl.[4] A61B *10/00*

U.S. Cl. 128—660 **8 Claims**



1. In an ultrasonic tomography device having

(a) a first ultrasonic transmitting and receiving system for scanning an object to be examined from different angles line by line,

(b) a fluid tank for receiving a predetermined quantity of fluid for immersing said object to be examined therein,

(c) a cover for said fluid tank, said cover having an opening for inserting said object to be examined,

(d) first support and driving means for rotating said ultrasonic transmitting and receiving system in said fluid tank about a vertical axis which is aligned toward said opening in said cover,

the improvement comprising:

(e) a second ultrasonic transmitting and receiving system for reflection tomography,

(f) means defining a horizontal axis which intersects said vertical axis only a few millimeters below the surface of said predetermined quantity of said fluid,

(g) second support means having an angled shape, said second support means having attached thereto said horizontal axis defining means,

(h) second driving means for rotating said second support means about said vertical axis,

(i) L-shaped third support means revolvingly suspended from said horizontal axis means, said third support means having a free end and supporting said second ultrasonic transmitting and receiving system on said free end, and

(j) means for revolving said second ultrasonic system through a median perpendicular to said opening in said cover, whereby the direction of radiation of said second ultrasonic system is aigned toward the center of said opening in said cover.

4,541,437

ULTRASONIC PULSE DOPPLER BLOOD FLOW METER

Shin-ichi Amemiya, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 25, 1983, Ser. No. 516,554

Claims priority, application Japan, Jul. 28, 1982, 57-131602

Int. Cl.[4] A61B *101/00*

U.S. Cl. 128—663 **8 Claims**

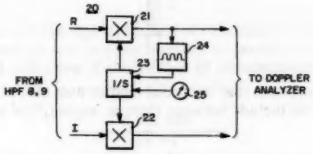
1. An ultrasonic pulse Doppler blood flow meter operatively connected to transmit and receive ultrasonic wave signals, having a specific repetition frequency, to and from living body tissue, comprising:

an ultrasonic probe for transmitting the ultrasonic wave signals to the living body tissue and receiving the ultra-

sonic wave signals from the living body tissue at the specified repetition frequency;

a receiving amplifier, operatively connected to said ultrasonic probe, for amplifying the received ultrasonic wave signals from the ultrasonic probe and outputting an output signal;

a Doppler detector, operatively connected to said receiving amplifier, for mixing the output signal of said receiving amplifier with a reference signal and for generating a Doppler signal of a specified depth having a low frequency element;



a high pass filter, operatively connected to said Doppler detector, for eliminating the low frequency element of the Doppler signal and outputting a high pass filtered signal;

an amplitude equalizing circuit, operatively connected to said high pass filter, for substantially equalizing the amplitude of the high pass filtered signal to a predetermined signal level and outputting an equalized signal;

a Doppler analyzer, operatively connected to said amplitude equalizing circuit, for analyzing the equalized signal of said amplitude equalizing circuit; and

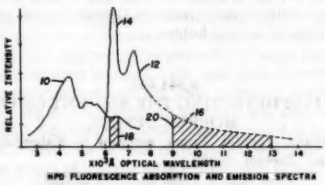
a display, operatively connected to said Doppler analyzer, for displaying the result of the analysis of said Doppler analyzer.

4,541,438

LOCALIZATION OF CANCEROUS TISSUE BY MONITORING INFRARED FLUORESCENCE EMITTED BY INTRAVENOUSLY INJECTED PORPHYRIN TUMOR-SPECIFIC MARKERS EXCITED BY LONG WAVELENGTH LIGHT

John G. Parker, Olney, and William D. Standbro, Columbia, both of Md., assignors to The Johns Hopkins University, Baltimore, Md.

Filed Jun. 2, 1983, Ser. No. 500,345
Int. Cl.[4] A61B 6/00
U.S. Cl. 128—664 **31 Claims**



1. An apparatus for the localization of cancerous tumors found in animal or human tissue, wherein said cancerous tumors have absorbed a tumor-specific marker, said apparatus comprising:

an optical excitation means for selectively radiating a portion of said tissue with excitation light in the red wavelength band;

an optical detection means for detecting infrared fluorescence emitted by said tumor-specific marker, wherein the detection of said infrared fluorescence emissions identifies the presence of cancerous tumors in said radiated tissue; and,

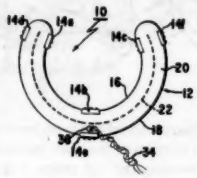
an indicator means, connected to said optical detection means for alerting the physician when said infrared fluorescence emission is detected.

4,541,439

MONITORING OF CAPILLARY BLOOD FLOW

Edward H. Hon, Bradbury, Calif., assignor to American Home Products Corporation (Del.), New York, N.Y.

Filed Apr. 23, 1982, Ser. No. 371,370
Int. Cl.[4] A61B 5/02
U.S. Cl. 128—691 **27 Claims**



1. A device for disposal in fluids for use in monitoring cervical and vaginal capillary bloods flowing within vaginal and cervical walls of a woman comprising:

sensing means for sensing said capillary bloods; and

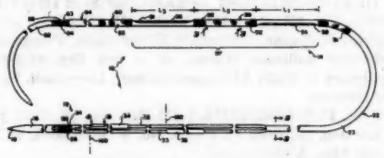
support means for positioning said sensing means against the vaginal and cervical walls of a woman in response to the support means being placed in the presence of said fluids.

4,541,440

BIPOLAR EPICARDIAL TEMPORARY PACING LEAD

Victor Parsonnet, Millburn, N.J., assignor to Cordis Corporation, Miami, Fla.

Filed Nov. 14, 1984, Ser. No. 671,290
Int. Cl.[4] A61N 1/04
U.S. Cl. 128—785 **28 Claims**



1. A bipolar temporary pacing lead comprising a lead body having a proximal end portion and a distal end portion and including first and second spaced apart wire conductors each encased in insulating material to form insulated wire conductors, a curved needle, at least one of said first and second wire conductors in said lead body distal end portion being connected to said curved needle, a straight needle, the proximal end portion of said lead body being connected to said straight needle, and said distal end portion of said lead body having insulation removed from portions of said respective first and second conductors thereby to form in said lead body distal end portion a first electrode-forming bare wire conductor portion and a second electrode-forming bare wire conductor portion.

4,541,441

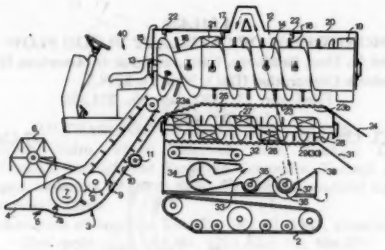
COMBINE HARVESTER

Tomohiko Ichikawa, Omiya; Takao Sugiyama, Hasuda, and Masao Manaka, Konosu, all of Japan, assignors to Institute of Agricultural Machinery, Omiya, Japan

Filed Oct. 12, 1983, Ser. No. 541,222

Int. Cl.[4] A01F *12/18*

U.S. Cl. 130—27 T **8 Claims**



1. In a combine harvester of the type having a cutting device provided in a front portion of the combine harvester, a conveying device for conveying the cut crops, a threshing auger for threshing the conveyed crops, and a separating device for separating the threshed crops, the improvement comprising:

said threshing auger comprising a cylindrical drum oriented in the travelling direction of the combine harvester, and a helical threshing vane on the drum;

a concave sieve adjacent a lower portion of said auger;

a cover above the auger;

said separating device comprising at least one separating auger arranged parallel with said threshing auger at a position under said concave sieve, and at least one sieve under the separating auger;

a transfer means under said separating device for transferring sorted crops;

a plurality of radial threshing teeth on said drum;

at least one agitator between adjacent portions of said vane; and

a plurality of radial agitating rods on said separating auger.

4,541,442

HEAT TREATMENT APPARATUS FOR HEATING HUMAN HAIR ON THE HEAD

Siegfried Hollmann, Darmstadt; Dieter Hoch, Pfungstadt, and Heribert Bollinger, Worms, all of Fed. Rep. of Germany, assignors to Wella Aktiengesellschaft, Darmstadt, Fed. Rep. of Germany

PCT No. PCT/EP82/00173, § 371 Date Jan. 20, 1983, § 102(e) Date Jan. 20, 1983, PCT Pub. No. WO83/00606, PCT Pub. Date Mar. 3, 1983

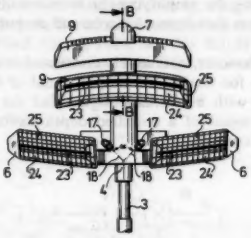
PCT Filed Aug. 16, 1982, Ser. No. 463,861

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1981, 3133851

Int. Cl.[4] A45D *1/00*

U.S. Cl. 132—9 **23 Claims**

1. Heat treatment apparatus for heating human hair on the head, comprising a support (7), two lateral infra-red radiators (6) mounted on the support (7) and extended from said support inwardly of the apparatus so as to embrace the human head at two sides thereof, and at least one central infra-red radiator (9) mounted above the lateral radiators (6) on the support (7), each radiator (6, 9) comprising an arcuate linear heating element (23), the ratio between the length (L) of the heating element (23) and its radius of curvature (R) being at least 0.2, each radiator having a radial median axis defining the main radiation direction of the radiator, the lateral radiators being mounted on



said support such that the radial median axes (26) of the lateral radiators (6) include between them an angle (β) of at least 80°.

4,541,443

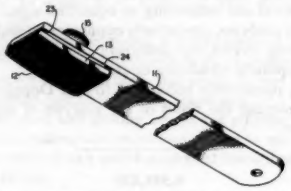
ABRADING/SMOOTHING TOOL

William S. Brothers, 1815 N. 1400 East, and William H. Brothers, 101 W. 4800 North, both of Provo, Utah 84604

Filed May 9, 1983, Ser. No. 492,808

Int. Cl.[4] A45D *29/04*

U.S. Cl. 132—75.6 **5 Claims**



1. An abrading and smoothing tool for reducing calluses and and the like, comprising

an elongate handle made of transparent material;

a holder, formed between opposite ends thereof and having a concave surface and a convex surface.

a screen having an abrasive material surrounding the openings thereof on at least one face; and

means for securing the holder to one end of the handle, with the screen pulled tightly over the convex surface and the ends thereof clamped and held between the opposite ends of the holder and the handle and having the surface thereof with abrasive material thereon turned outwardly with respect to said holder.

4,541,444

DEVICE FOR DETECTING THE AMOUNT OF COINS IN HOPPER DEVICE

Tomoo Okada, Tochigi, Japan, assignor to Kabushiki Kaisha Universal, Tochigi, Japan

Filed Sep. 7, 1983, Ser. No. 530,037

Claims priority, application Japan, Sep. 13, 1982, 57-158050

Int. Cl.[4] G07D *9/04*

U.S. Cl. 133—4 A **7 Claims**

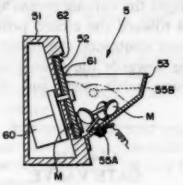
1. In a hopper device having a rotatable scopping disc for scooping up collected coins having conductivity one by one; the improvement comprising:

an insulating hopper member for accommodating coins;

a first electrode mounted in said hopper member in a lower portion thereof;

a second electrode mounted in said hopper member in a portion thereof at a level higher than the level of said first electrode, said second electrode being of opposite polarity

from said first electrode and electrically to said first electrode to complete an electrical circuit between said electrodes and through a plurality of conductive coins accommodated in said hopper member to produce a detection signal indicative of the amount of accommodated coins.



4,541,445

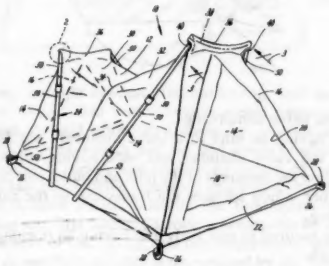
TENT

Robert W. Ferguson, Ann Arbor, Mich., assignor to Oyster Tent Company, Ann Arbor, Mich.

Filed May 24, 1984, Ser. No. 613,700

Int. Cl.⁴ A45F *1/16*

U.S. Cl. 135—106 **12 Claims**



12. In a tent having a longitudinally extending top wall longitudinally extending sidewalls and end walls at longitudinal ends of the top wall and sidewalls, the improvement which comprises said end walls each being of a generally trapezoidal shape with the top and bottom of each end wall being generally horizontal and the sides of each end wall inclining upwardly and inwardly from bottom to top so that the top of each end wall is shorter than the bottom, and means for supporting the tent in erected condition via the top of each end wall comprising a ridge pole extending along the top of each end wall and pole structures supporting the ends of the ridge poles, said tent comprising an arch-shaped seam disposed longitudinally between said end walls, said seam extending up one sidewall, merging into said top wall, extending across said top wall, merging into the opposite sidewall, and extending down the opposite sidewall, said seam being disposed at an elevation which is below that of said ridge poles, said pole structures engaging points of support adjacent the ends of said seam, and means providing connections between said pole structures and the tent, said connections being at the ends of said seam.

4,541,446

IN-GROUND CONTROL UNIT FOR WATERING SYSTEMS

Frank C. Hogan, P.O. Box 148, Mesa, Ariz. 85201

Filed Mar. 31, 1983, Ser. No. 480,903

Int. Cl.⁴ G01F *23/24;* F17D *3/00*

U.S. Cl. 137—2 **6 Claims**

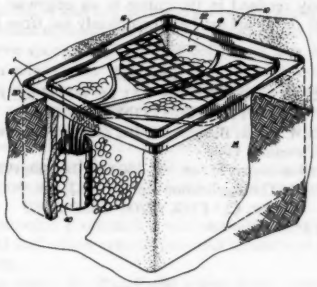
6. The method of automatically controlling an area sprinkling system having a solenoid operated control valve for controlling the admission of water into said system, said method comprising:

(a) providing a collection member having an in-ground housing defining an upper and lower open ends;

(b) placing said housing in a pre-selected location where flooding is likely to occur;

(c) providing a substantially peripheral water collection means about the upper end of said housing for collecting a representative sample of water;

(d) directing said collected water to a collection chamber through a conduit means;



(e) detecting the water level in said collection chamber by a sensing means positioned therein and emitting a control signal to said control valve upon establishing a pre-determined water level in said chamber for controlling the admission of water to said sprinkling system; and

(f) continuously draining said collection chamber to the subjacent soil via said open lower end of said collection member at a rate directly related to the ability of the soil to percolate water whereby said control signal permits admission of water only when the soil is able to accept further watering.

4,541,447

HOT TAP SADDLE FITTING

Karel Soumar, 21 Oatley Park Ave., Oatley, New South Wales, Australia (2223), and Earl Erling, 6/5 Benalla Ave., Ashfield, New South Wales, Australia (2131)

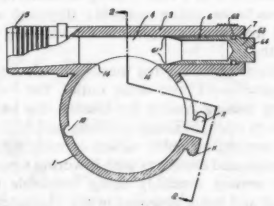
PCT No. PCT/AU82/00076, § 371 Date Dec. 28, 1982, § 102(e) Date Dec. 28, 1982, PCT Pub. No. WO82/04111, PCT Pub. Date Nov. 25, 1982

PCT Filed May 14, 1982, Ser. No. 454,053

Claims priority, application Australia, May 15, 1981, PE8894

Int. Cl.⁴ F16K *43/00, 51/00*

U.S. Cl. 137—15 **14 Claims**



12. A method for joining a pipe with a plastic gas main containing gas under pressure by means of an improved hot tap saddle fitting including a tubular chamber having an opening, and a tubular cutter slidably movable within the interior of the tubular chamber along a chordally-oriented path relative to the

plastic gas main pipe, and having a cutting edge and a hollow interior, comprising the steps of:

(a) sealing engaging said chamber opening to a portion of said plastic gas main;

(b) cutting said portion of said plastic gas main with said movable cutter by slidably moving said cutter within said tubular chamber along a chordal direction so that said pressurized gas communicates with said chamber; and

(c) guiding rolling and wedging the leading edge of the resilient swarf which results from said cutting step into the hollow interior of said cutter where the swarf assumes a crescent shape cross-section whose lateral edges resiliently engages the interior of said cutter where it is positively retained in the cutter in an edgewise orientation after the swarf has been completely cut from said pipe.

4,541,448

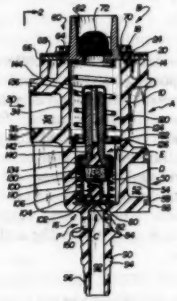
FREEZE PROTECTION VALVE WITH METAL TO PLASTIC FITTING DESIGN

Lawrence A. Kolze, Bensenville, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 340,605, Jan. 19, 1982, Pat. No. 4,460,006. This application Apr. 6, 1982, Ser. No. 365,882

Int. Cl.⁴ F16K *17/00*; G05D *23/02*

U.S. Cl. 137—62 **26 Claims**



1. A freeze protection valve comprising:

a one-piece plastic valve housing including an elongated recess defined by a peripheral wall with an open end, a drain outlet in fluid communication with the elongated recess, and a fluid transfer recess defined in the peripheral wall and having a wall portion which is adapted to be cut through to the elongated recess to provide a fluid transfer passage; the peripheral wall defining a first seating region surrounding the open end and defining a second seating region surrounding the fluid transfer recess which second seating region is adapted to receive a second detachable fitting assembly in a fluid sealing relationship therewith;

a first detachable fitting assembly disposed adjacent the housing first seating region in fluid sealing engagement therewith;

a freeze drain outlet valving means for selectively opening and closing the freeze drain outlet, the valving means including biasing means for biasing the valving means towards its open, draining position; and,

a thermal sensing assembly which extends with increasing temperature and contracts with lowering temperature, the thermal sensing assembly being insertable through the open end and being disposed in the elongated recess and retained therein adjacent the drain outlet by the first fitting assembly, the thermal sensing assembly including a thermal element cup operatively connected with the freeze drain outlet valving means, a thermal sensing element disposed in the thermal element cup which expands with increasing temperature and contracts with decreasing temperature, a piston means operatively connected at one end with the thermal element and operatively connected adjacent its other end with the valve housing such that: (a) as the thermal element expands, the thermal sensing member urges the valving means against the biasing of biasing means toward the closed position and (b) as the thermal element contracts, the biasing means biases the valving means towards the open position, whereby the freeze protection valve opens and closes in response to temperature.

4,541,449

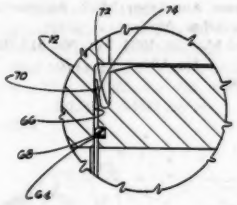
GATE VALVE

James S. Burke; David L. Miller, and Edmund A. Fisher, all of Houston, Tex., assignors to Cameron Iron Works, Inc., Houston, Tex.

Filed Apr. 28, 1983, Ser. No. 489,494

Int. Cl.⁴ F16K *17/38, 3/02*

U.S. Cl. 137—72 **3 Claims**



1. A gate valve comprising

a body having an inlet to a valve chamber, and an outlet from the valve chamber and each having surfaces surrounding the openings of the inlet and outlet into the valve chamber which surfaces are transverse to the axis of its opening,

a bonnet secured to said body and having an opening therethrough,

a gate in said valve chamber,

a stem connected to said gate and extending through said bonnet opening, and

a bushing positioned between said gate and the body and surrounding the opening of said outlet in said chamber and having a surface transverse to its axis and an elastomeric seal for sealing between said transverse surface of said bushing and said transverse surface of said body surrounding said outlet,

said transverse surface of said bushing engaging said body transverse surface surrounding said outlet, having a radial groove to provide a metal lip facing radially outward and inclined toward said body transverse surface surrounding the opening of said outlet with said lip exposed to the pressure within said valve chamber,

said lip being sufficiently flexible to maintain a seal against said body transverse surfaces surrounding said outlet even when said elastomeric seal has been destroyed by heat and said lip is deformed by heat.

4,541,450

LIQUID PROPORTIONING SYSTEM

Dan Bron, 36 Palmach St., Haifa, Israel

Filed May 21, 1982, Ser. No. 380,895

Claims priority, application Israel, Jun. 3, 1981, 63029

Int. Cl.⁴ G05D *11/035*

U.S. Cl. 137—99 **5 Claims**

1. A proportioning system for the admixture of a fluid to a liquid-carrying main line in a substantially constant, presettable proportion to the flow rate thereof, comprising

pump means adapted, in a first working stoke, to draw a

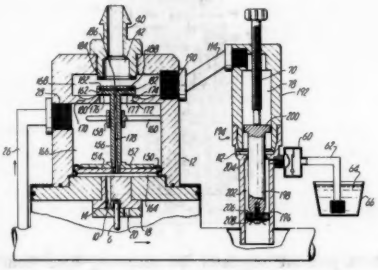
quantity of said fluid from a vessel and, in a second working stroke, to inject said quantity into said main line;

pump-drive means mechanically coupled to said pump means, impactable by said main-line liquid and adapted to drive said pump means during one of said working strokes;

flowmeter means for monitoring the instantaneous flow rate of said main line and converting said flow rate into a flow rate proportional rotary motion of an output member of said flowmeter means;

pilot-value means for converting said rotary motion into trains of substantially square-wave-like liquid-pressure pulses of a frequency dependent on said flow-rate-proportional rotary motion;

control valve means receiving fluid from said main line and



having a single conduit communicating with said pump drive means, said control-valve means actuated in response to, said pilot-valve means to alternatingly pass liquid from said main line via said single conduit to said pump-drive means, and permitting return of said liquid from said pump-drive means via said single conduit to said control-valve means, wherein the fluid quantity drawn during said first working stroke is presettable by adjusting the length of said stroke, and the frequency of injection of said preset fluid quantity is determined by the flow rate of said main line as monitored by said flowmeter means and, wherein said drive piston is resiliently biased in the second working stroke by the pressure of said fluid in said main line and said drive piston is impacted on its stop-means-side face only, supplying the force for said first working stroke, said force also overcoming said bias.

4,541,451

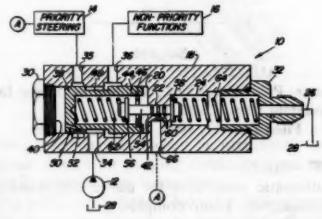
PRIORITY VALVE

Richard A. Wittren, and James A. Miller, both of Cedar Falls, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Jun. 15, 1984, Ser. No. 621,329

Int. Cl.[4] G05D *11/00*

U.S. Cl. 137—118 **11 Claims**



1. A priority valve for controlling fluid flow between a power source and functions operated by said power source, one of said functions being a priority function and at least one other function being a secondary function, said valve comprising:

(a) a housing having first and second bores formed therein;

(b) an inlet passage connecting said power source to said first bore and first and second outlet passages connecting said first bore to said priority and secondary functions, respectively;

(c) a valve spool positioned in said first bore so as to divide said first bore into first and second ends, said valve spool having an annular groove which is in constant communication with said inlet passage and with at least one of said outlet passages, and a passageway formed therein having a first opening which is in constant communication with said first end of said first bore and a second opening which is in constant communication with said first outlet passage, said valve spool being movable between a first position wherein said annular groove is in communication with said first outlet passage while said valve spool blocks fluid flow to said second outlet passage from communication with said annular groove, and a second position wherein said annular groove is in communication with said second outlet passage, while said valve spool blocks said first outlet passage from communication with said annular groove;

(d) a pin movably positioned in said second bore having an enlarged end which extends into said second end of said first bore;

(e) biasing means for urging said valve spool toward said first position and said pin toward said valve spool;

(f) means carried by said valve spool for engagement with said pin after limited movement of said pin relative to and in a direction away from said valve spool; and

(g) a load signal passage establishing fluid communication between said priority function and said second end of said first bore, which fluid acts to urge said valve spool toward said first position and said pin out of said first bore such that a decrease in pressure difference between said load signal passage and said inlet passage urges said valve spool toward said first position, an increase in pressure difference between said load signal passage and said inlet passage allows said valve spool to move toward said second position, and a predetermined maximum fluid pressure within said load signal passage causes said pin to move out of said first bore engaging and moving said spool toward said second position.

4,541,452

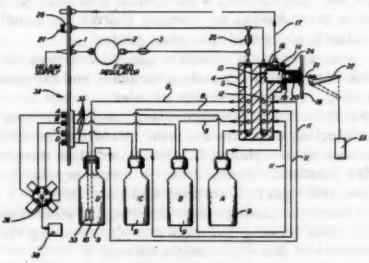
SOLVENT PRESSURIZATION SYSTEM

Roland C. Paradis, Newtown, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Oct. 10, 1984, Ser. No. 659,374

Inc. Cl.[4] B01D *15/08*

U.S. Cl. 137—209 **7 Claims**



1. A solvent pressurization system for use in liquid chromatography, said system comprising:

a source of pressurized gas;

a plurality of sealed vessels, said vessels being adapted to hold solvents therein;

each said vessel having a gas input port, said vessels being located within a closable compartment; and

a double manifold having a distribution chamber in communication with said pressurized gas from said gas source and an exhaust chamber communicatable with venting means, a set of fittings for each vessel for controlling the gas flow from said distribution chamber to said vessel and from said vessel to said exhaust chamber, each set of fittings including inlet valve means and outlet valve means and an element for opening or closing both valve means together.

4,541,453

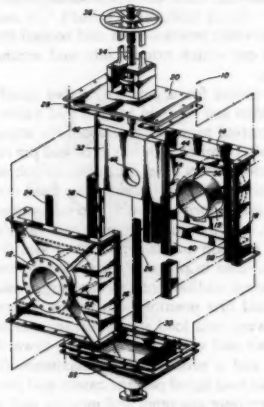
HIGH TEMPERATURE SLIDE VALVE

Harlan G. Graf; Harry R. Janssen; Don L. Edwards, and Don D. Duren, all of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Nov. 3, 1983, Ser. No. 548,464

Int. Cl.⁴ F16K *3/30*; F16L *59/00*

U.S. Cl. 137—315 **5 Claims**



1. A slide valve for use in a high temperature gas line for controlling hot gas flow comprising:

(a) a pair of connecting members for connecting the valve to a high temperature gas line;

(b) a housing comprising a pair of split housing members, one of said split housing members being attached to each of said connecting members;

(c) a pair of slide plate guides connected to one of said split housing members;

(d) a slide plate having a valve stem attached thereto, said slide plate having an opening therethrough and being slideable along said slide plate guides;

(e) inner cylindrical members coextensive with the inner diameter of said connecting members and extending to a sliding fit against said slide member;

(f) a first insulating means covering the inner surfaces of said connecting members and said cylindrical members and extending to a sliding fit against said slide member, said first insulation means being in direct contact with the controlled gas flow through said slide valve;

(g) a second insulating means covering the inner surfaces of said split housing members and also covering the outer surfaces of said cylindrical members;

(h) gas purge means extending into said housing to effect cooling of the internal ports of said slide valve; and

(i) slide plate moving means for moving said slide plate from a first position to a second position.

4,541,454

PRESSURE REGULATORS

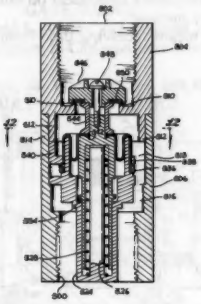
Oded E. Sturman, 18241 Andrea Clr. N.; Benjamin Grill, 9819 Ediwanda Ave., both of Northridge, Calif. 91329, and Lynn Harrison, 23554 Cherry St., Newhall, Calif. 91321

Continuation-in-part of Ser. No. 327,800, Dec. 7, 1981, abandoned. This application Mar. 26, 1984, Ser. No. 593,719

The portion of the term of this patent subsequent to May 14, 2002, has been disclaimed.

Int. Cl.⁴ F16K *31/12*

U.S. Cl. 137—505.41 **9 Claims**



1. A pressure regulator for receiving fluid from a fluid source and delivering fluid at a regulated pressure comprising first and second housing members, each having first and second ends, said first housing member having an inlet port at said first end thereof, said second housing member having an outlet port at said first end thereof and a valve seat having a valve seat opening therethrough adjacent said second end and facing said first end thereof, said first and second housing members being joined adjacent said second ends thereof so that said inlet port, said outlet port and said valve seat are all coaxial, said first housing member having a spring housing integral therewith and supported internally to said first housing member of at least one support so as to allow fluid flow therebetween, said spring housing being closed adjacent the inlet port end thereof, a compression spring within said spring housing, a valve closure assembly fitting at least in part within said spring housing and extending through said valve seat opening, said valve closure assembly having a valve closure member facing said valve seat, said valve closure assembly being moveable along the axis of said valve seat between a closed position with said valve closure member displaced from said valve seat and toward said second port, said compression spring urging said valve closure assembly to said open position, a diaphragm sealingly fastened adjacent its outer periphery to said spring housing and sealingly fastened adjacent its inner periphery to said valve closure assembly, thereby sealing said spring housing and isolating said spring from fluid in said inlet and outlet ports.

4,541,455

AUTOMATIC VENT VALVE

Hugo Hauser, Palo Alto, Calif., assignor to Tritec Industries, Inc., Mountain View, Calif.

Filed Dec. 12, 1983, Ser. No. 559,636

Int. Cl.⁴ F16K *15/02*

U.S. Cl. 137—516.27 **7 Claims**

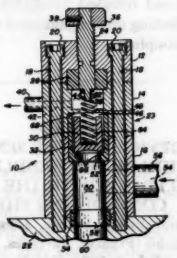
1. An automatic vent valve for use in combination with a positive displacement pump comprising:

a body for the vent valve;

an inlet chamber formed through the body for communication with the discharge of a positive displacement pump;

an outlet channel connected in direct flow communication with the inlet chamber through the body;

a vent chamber formed in the body;
a flow channel extending in the body from said inlet chamber to said vent chamber;
a stoppage member, which is a cylinder and has an internal space formed about the axis of said cylinder and opening upward, slidably mounted intermediate said inlet and vent chambers in said flow channel;
an upper stoppage member seat;
a lower stoppage member seat;
a means seated in said internal space for biasing said stoppage member onto said lower seat in a position which prevents flow from said inlet chamber into said flow channel;



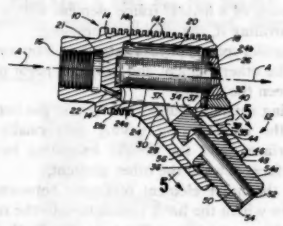
whereby said biasing means can be overcome by pressure within said inlet chamber such that, during the period that said stoppage member moves from said lower seat to said upper seat where flow is blocked from said flow channel into said vent chamber, flow is permitted between said inlet chamber through said flow channel into said vent chamber and such that, during the period of removal of such pressure, said stoppage member moves from said upper seat to said lower seat and flow is permitted between said inlet chamber through said flow channel into said vent chamber.

4,541,456

VALVE ASSEMBLY FOR PURGING PARTICULATES FROM A STEAM PIPING SYSTEM

Michael Troy, Westmont, Ill., assignor to Engineering Resources, Inc., Chicago, Ill.

Filed Feb. 7, 1984, Ser. No. 577,688
Int. Cl.[4] F16K *1/02*
U.S. Cl. 137—549 **23 Claims**



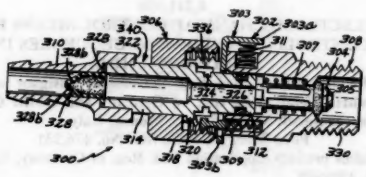
1. A valve assembly adapted to be operatively associated with a strainer device for purging condensate and particulate debris from live steam lines comprising:
A. a housing including a channel having a fluid entrance thereinto, said channel terminating at an annular valve seat positioned between said channel and a cavity downstream of the channel; and
B. an elongated valve stem mounted in said housing for selective axial movement to open and close communication between said channel and cavity through said valve seat, said stem including:
1. a valve head having a projecting end portion extending through said valve seat into said channel and dimensioned to form an annular clearance space between the valve seat and end portion in a closed position of the valve;
2. said valve head further including an annular shoulder dimensioned to be engaged against the valve seat for closing the valve, said shoulder tapering between said end portion and an enlarged barrel portion of said stem disposed in said cavity,
3. said stem having an axial conduit communicating at one end thereof with said cavity and at its opposite end with ambient atmosphere,
4. said stem being retractable initially to withdraw the shoulder from the valve seat and the projecting end portion from the valve seat gradually so as to permit only bleeding of condensate and debris from the channel into the cavity through said clearance space while the end portion is in the valve seat, and thereafter, retractable to withdraw said projecting end portion completely from the valve seat so as to enable blow-off of the condensate and debris from the channel through said cavity and conduit of the stem for purging the steam lines.

4,541,457

TWO-WAY UNCOUPLING VALVE ASSEMBLY

Brian J. Blenkush, Maple Grove, Minn., assignor to Colder Products Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 455,202, Jan. 3, 1983, abandoned, which is a continuation-in-part of Ser. No. 359,071, Mar. 17, 1982, Pat. No. 4,436,125. This application Feb. 24, 1984, Ser. No. 583,117
Int. Cl.[4] F16L *37/08*
U.S. Cl. 137—614.06 **18 Claims**



1. A two-way uncoupling valve assembly for use in a fluid line, the flow of fluid generally being in a downstream direction, the coupling assembly comprising:
(a) a female coupling member having a front end and a back end, said female coupling member defining a path for the flow of fluid therethrough;
(b) a male coupling member having a front end and a back end and defining a path for the flow of fluid therethrough, the front end of said male coupling member facing the front end of said female coupling member, said male coupling member including a hollow tubular portion, said tubular portion being constructed and arranged for removable insertion into the front end of said female coupling member, said female coupling member defining an axial tubular bore within which said tubular portion of said male coupling member is concentrically received, said tubular portion of said male coupling member including a seal about its circumference for providing a fluid-tight seal between the outside surface on said tubular portion and the inside surface of said tubular bore of said female coupling member upon insertion of said male coupling member into said female coupling member;
(c) a valve assembly adapted for reciprocating longitudinal axial movement within the tubular bore of said female coupling member between a front end position and a back

end position, said valve assembly being constructed and arranged for engaging said male coupling member upon insertion of said male coupling member into said female coupling member a predetermined distance whereby said valve assembly is caused to move toward the back end of said female coupling member into said back end position thereby enabling fluid flow from said male coupling member through said female coupling member, said valve assembly including means for sealing off the fluid flow path through said female coupling member when said valve assembly is in said front end position;

(d) locking means proximate the front end of said female coupling member for releasably locking said male coupling member in said female coupling member when said valve assembly is in said back end position, said locking means being activated upon insertion of said male coupling member a predetermined distance into said female coupling member;

(e) release means interconnected to said locking means for deactivating said locking means whereby said male coupling member is released by said locking means;

(f) biasing means adapted for biasing said valve assembly toward the front end of said female coupling member into said front end position whereby when said male coupling member is released by deactivating said locking means, said valve assembly is biased into said front end position forcing said male coupling member in a downstream direction and preventing the flow of fluid through said female coupling member; and

(g) threaded coupling means for removably coupling said male coupling member to said female coupling member in a coupled state, said threaded coupling means enabling axial movement of said male coupling member to provide for axial movement of said valve assembly within said female coupling member between said back end position and said front end position while in said coupled state.

4,541,458

ELECTROMECHANICAL CONTROL MEANS FOR CONTROLLING MOVEMENT SEQUENCES IN A TEXTILE MACHINE

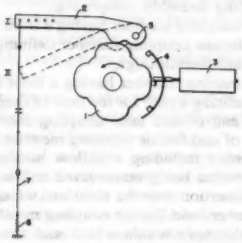
Josef Reiter, Bleialf, Fed. Rep. of Germany, assignor to Reiter GmbH, Bleialf, Fed. Rep. of Germany and OMM Officine Meccanotessili Monza S.p.A., Monza, Italy

Filed Mar. 17, 1983, Ser. No. 476,231

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1982, 3209958

Int. Cl.⁴ D03C *13/00*

U.S. Cl. 139—55.1 **5 Claims**



1. Electromechanical control means for controlling movement sequences in a textile machine, said control means comprising:

a control cam having a control face;

a push member which runs over said control face of said control cam, said push member effecting the movement sequence in the textile machine which is to be controlled;

a drive shaft;

a spring coupling for connecting said drive shaft to said control cam; and

and electromagnet which is adapted to be energized by electrical control signals respectively for engaging and disengaging said spring coupling to be operative in conformity therewith, said control cam including a sleeve, and said spring coupling including a torsion spring which is disposed concentrically respectively in spring clutch relationship about said sleeve of said control cam and about said drive shaft; said torsion spring having two ends, one which is fixed to one of said control cam and said drive shaft, with the inner diameter of said torsion spring being smaller than the outer diameter of said one of said control cam and said drive shaft to which said one end is fixed; the other end of said torsion spring being adapted to be engaged and released by said electromagnet respectively for effecting said engagement and disengagement of said spring coupling.

4,541,459

HOOKING DEVICE FOR THE SEMI-AUTOMATIC CONNECTION OF THE HEDDLE FRAMES OF WEAVING LOOMS WITH THE LEVERS FOR CONTROLLING THEM

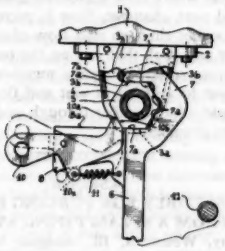
Joseph Palau, Saint Jorioz, France, assignor to S.A. Des Etablissements Staubli (France), Faverges, France

Filed Feb. 8, 1984, Ser. No. 578,385

Claims priority, application France, Feb. 16, 1983, 83 02733

Int. Cl.⁴ D0C3 *13/00*

U.S. Cl. 139—88 **1 Claim**



1. In a weaving loom, an improved device for the semiautomatic connection of a heddle frame element with a lever element for controlling it, the device comprising:

a pair of parallel spaced cheeks extending from one element toward the other element and having a pivot pin extending between the cheeks;

a locking ring rotatably supported by said pin between said cheeks, the locking ring having polygonally disposed outer surfaces, and the cheeks extending beyond said outer surfaces toward the other element;

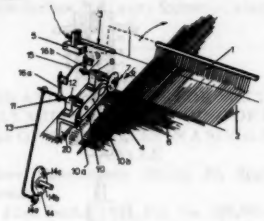
a hook on the other element pivotable between a closed position in which the hook connects with the ring and an open position away from the ring, the hook having an opening shaped to receive the ring in said closed position and having bearing surfaces within the opening shaped to engage outer surfaces of the ring, and the hook having a heel member extending from the hook and between the cheeks in said open position and lying against one of the polygonal surfaces of the ring; and

releasable spring-loaded retaining means carried by the hook and operative to engage the ring and hold said bearing surfaces against said polygonal surfaces in said closed position.

4,541,460
SHUTTLELESS WEAVING MACHINE

Hubert P. van Mullekom, Deurne, Netherlands, assignor to Ruti-Te Strake B.V., Deurne, Netherlands

Filed Aug. 25, 1982, Ser. No. 411,278
Claims priority, application Netherlands, Sep. 9, 1981, 8104169
Int. Cl.⁴ D03D *47/00, 41/00*
U.S. Cl. 139—429 1 Claim

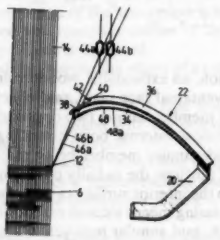


1. In a shuttleless weaving machine of the type comprising a reed, a weft conveyor fed with a continuous weft yarn supply, said weft conveyor being movable to insert weft lengths successively into the weaving shed, cutting means for cutting tail ends of the weft lengths after insertion thereof into the weaving shed, and means for catching and retaining the weft lengths during a beating up motion performed by said reed, the improvement wherein said means for catching and retaining the weft lengths comprises a disc rotatable about an axis ending substantially parallel to the weft direction, a curved stationary clamp surface disposed opposite a portion of the periphery of said disc to define a curved gap therebetween in which the weft lengths are received and advanced, drive means for intermittently rotating said disc to advance the weft lengths within said gap in the direction of the beating up motion of said reed, said cutting means including a movable cutting element, said drive means being also interconnected to said movable element to move the latter simultaneously with the advancement of weft lengths within said gap.

4,541,461
RIBBON LOOM

Carlo Villa, Melzo, Italy, assignor to Textilma AG, Hergiswil, Switzerland

Filed Mar. 5, 1984, Ser. No. 586,322
Claims priority, application Switzerland, Mar. 16, 1983, 1451/83
Int. Cl.⁴ D03D *51/40*
U.S. Cl. 139—442 8 Claims



1. A power loom, especially a ribbon loom for weaving ribbins, comprising:

a weft thread insertion needle arranged at one side of warp threads and having a plane of motion for inserting at least one weft thread loop into a shed of the warp threads;

said weft thread insertion needle having a length and a free end;

said weft thread insertion needle having a longitudinal slit extending over substantially the entire extent of said length for accommodating at least two weft threads;

said longitudinal slit having opposite ends;

said longitudinal slit being closed at each of said opposite ends thereof;

said weft thread insertion needle having a hook structure arranged in the region of said free end;

said hook structure being provided with a point oriented in the direction of the free end of the weft thread insertion needle;

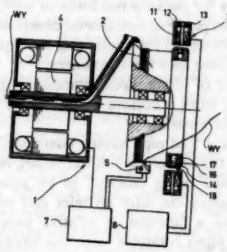
thread guides for holding said at least two weft threads in selected and non-selected positions such that said at least two weft threads can be picked up by the weft thread insertion needle and inserted into said shed; and

said hook structure being arranged exterior to said longitudinal slit, at least approximately in said plane of motion of the weft thread insertion needle and oriented toward said thread guides for the warp threads.

4,541,462
WEFT YARN STORING, FEEDING AND MEASURING DEVICE, PREFERABLY FOR JET WEAVING MACHINES

Lars H. G. Tholander, Huskvarna, Sweden, assignor to Aktiebolaget IRO, Ulricehamn, Sweden

PCT No. PCT/SE83/00447, § 371 Date Aug. 8, 1984, § 102(e) Date Aug. 8, 1984, PCT Pub. No. WO84/02361, PCT Pub. Date Jun. 21, 1984
PCT Filed Dec. 12, 1983, Ser. No. 641,899
Claims priority, application Sweden, Dec. 10, 1982, 8207098
Int. Cl.⁴ D03D *47/36*
U.S. Cl. 139—452 13 Claims



1. Yarn storing, feeding and measuring device, particularly for jet weaving machines, having a stationary storage drum (2) onto which an intermediate yarn store is wound by a winding-on device (3) and from which the yarn (WY) is withdrawn spiralling around the withdrawal end of the storage drum, a plurality of yarn stopping devices (10) being arranged at angular intervals around the storage drum, said yarn stopping devices consisting of yarn stopping elements (14) and of actuator means (11) moving said stopping elements into and out of the path of the yarn being withdrawn, and an actuator control device (8) adjustable to desired yarn lengths to be withdrawn, said control device transmitting actuating signals to said plurality of yarn stopping devices, characterized in that said control device (8) comprises storing means (20) for storing an information regarding the yarn stopping device actuated at the end of the next preceding yarn withdrawal cycle and calculating means (20) for determining a selected series sequence of said yarn stopping devices to be alternately actuated and deactuated consecutively during the yarn withdrawal cycle on the basis of said stored information and of an adjustable input information for the calculating means representing at least one

significant parameter for the distance/time function of the weft yarn insertion process cycle, said calculating means (20) also determining the yarn stopping device to be kept actuated at the end of the present weft yarn withdrawal cycle as last one in said selected series sequence of alternately actuated and de-actuated yarn stopping devices, on the basis of said stored information and of an input information representing said desired yarn length.

4,541,463

FILLER ON PACKING MACHINES

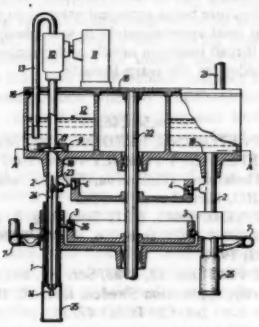
Hans A. Rausing, Wadhurst Park, England, assignor to Tetra Pak International AB, Lund, Sweden

Filed Aug. 12, 1983, Ser. No. 522,805

Claims priority, application Sweden, Aug. 17, 1982, 8204730

Int. Cl.⁴ B67C *3/02*

U.S. Cl. 141—147 **16 Claims**



1. A filler for packing machines in which a liquid product is metered into packing containers, comprising:

a rotatable vessel for containing the liquid product which is to be filled into the containers;

a plurality of filling pipes rotatable with the vessel and projecting from a bottom of the vessel and communicating with the vessel;

a stationary feed pipe having two ends, both of which open below the liquid level in the vessel, one outlet end of said feed pipe being adapted to be joined successively for communication with an inlet end of each of the filling pipes as a function of relative movement between the filling pipes rotatable with the vessel and the stationary feed pipe; and

a pump arranged between the ends of the feed pipe for feeding liquid from the vessel to the containers when communication has been established between the outlet end of the feed pipe and the inlet end of the filling pipe.

4,541,464

VALVE DEVICE FOR THE PREVENTION OF THE OVERFILLING OF GAS CYLINDERS AND SIMILAR PORTABLE CONTAINERS

Ole Christiansen, Humlebaek, Denmark, assignor to Kosan Teknova A/S, Niva, Denmark

Filed Sep. 30, 1983, Ser. No. 538,052

Claims priority, application Denmark, Oct. 15, 1982, 4592/82; Feb. 23, 1983, 802/83

Int. Cl.⁴ B65B *3/04*; F16K *33/18*

U.S. Cl. 141—198 **6 Claims**

1. A valve device for the prevention of overfilling of gas cylinders and similar portable containers, comprising

a filling channel provided in a container top piece and forming, in the prescribed filling position of the container, communication from a connectable filling mouth piece to the container space,

a universally pivotal member journalled in the top piece and operative to control said communication,

a load urging said pivotal member toward a given orientation in space so as to rotate in relation to the top piece when the container is tilted away from the prescribed filling position, thereby causing an interruption of the communication,

a float to stop the filling operation upon reaching the prescribed, highest level in the container,

a valve seat located at the lower end of said filling channel,

a valve member which by the charging pressure is urged toward said seat and during the normal filling operation is kept clear of the seat by means of said pivotal member directionally oriented by said load.

4,541,465

EXPANDABLE WOODTURNING CHUCK

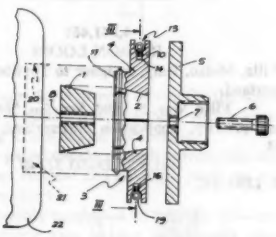
Bruce R. Leadbeatter, 59 Turton Ave., Belmore, New South Wales 2192, Australia

Filed Sep. 30, 1983, Ser. No. 537,443

Claims priority, application Australia, Sep. 30, 1982, PF6128; Dec. 7, 1982, PF7150

Int. Cl.⁴ B27C *7/00*

U.S. Cl. 142—55 **9 Claims**



1. In combination, an expandable woodturning chuck and a substantially conventional face plate, said chuck comprising a generally annular member having two opposite end faces, and a substantially conical internal bore extending between said end faces, and said annular member being radially segmented into a plurality of portions the radially outer surfaces of which are shaped to grip the interior surface cavity of a workpiece; an annular resilient biasing means located exterior of, and substantially co-axial with, said annular member to urge said portions radially inwardly; a single frusto-conical plug located within, and co-axial with, said bore, said plug being rotatable relative to said bore, having a maximum diameter greater than the minimum diameter of said bore, and having a centrally located threaded aperture; and said face plate having a threaded shank secured thereto and extending away from said face plate,

wherein one end of said chuck abuts said face plate, said chuck is rotatable relative to said face plate about said threaded shank, said threaded shank extends through said bore towards said plug and threadedly rotatably engages said centrally located threaded aperture in said plug, whereby relative rotation between said shank and said annular member draws said plug into said bore towards said face plate and thereby clamps said annular member against said face plate, the movement of said plug into said bore radially expanding said annular member to grip the interior surface of a cavity formed in a workpiece to be turned.

4,541,466

METHOD AND APPARATUS FOR MACHINING, PREFERABLY MILLING OR GRINDING OF EDGES AND ROUNDINGS OF WORKPIECES IN A SINGLE MACHINE CYCLE

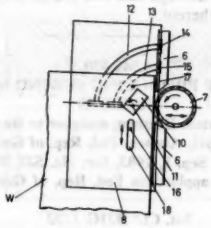
Ludolf Stegherr, Donaustaufer Strasse 30, Regensburg, Fed. Rep. of Germany

Filed Jun. 3, 1981, Ser. No. 269,905

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1980, 3021359

Int. Cl.⁴ B27B *1/00*

U.S. Cl. 144—363 **9 Claims**



1. Apparatus for shaping the edges of a workpiece comprising

(a) a table for supporting the workpiece;

(b) a tool operatively engageable with an edge of the workpiece when the latter is supported on the table;

(c) a feed device selectively operable for displacing the workpiece on the table in a first longitudinal direction when the tool is engaged with the workpiece whereby a longitudinal edge thereof is shaped by the tool;

(d) clamp means selectively operable for rotating the workpiece about an axis perpendicular to the longitudinal direction when the tool is engaged therewith whereby a corner of the workpiece is rounded; and

(e) position sensing means responsive to the position of the workpiece on the table for selectively operating the feed device and the clamp means such that the tool shapes a longitudinal edge of the workpiece when the feed device is operated and rounds a corner of the workpiece when the clamp means is operated.

8. A method for shaping the edges of a polygonal workpiece comprising:

(a) moving the workpiece in a first longitudinal direction while a tool is engaged with the workpiece for shaping a longitudinal edge thereof;

(b) stopping longitudinal movement of the workpiece after the latter reaches a predetermined position at which the tool engages the workpiece where a corner is to commence;

(c) rotating the workpiece about an axis perpendicular to the longitudinal direction while the tool remains engaged with the workpiece thereby rounding the corner; and

(d) repeating steps (a), (b), and (c) until all of the edges of the work piece have been shaped and all of the corners thereof have been rounded.

4,541,467

HEAVY DUTY PNEUMATIC RADIAL TIRES

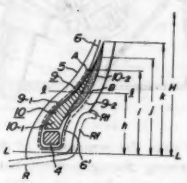
Masao Nakamura, and Kenji Karato, both of Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Continuation of Ser. No. 422,915, Sep. 24, 1982, abandoned. This application Feb. 16, 1984, Ser. No. 580,271

Claims priority, application Japan, Nov. 24, 1981, 56-187997

Int. Cl.⁴ B60C *9/08, 15/06*

U.S. Cl. 152—548 **4 Claims**



1. A heavy duty pneumatic radial tire comprising;

a tread portion, a pair of side portions extending radially inward from both sides of said tread portion, a pair of bead portions extending from said side portions and each reinforced with a bead ring, a radial carcass ply of cords reinforcing said side and bead portions and wrapped around said bead rings from inside toward outside to form turnup portions, a metal cord reinforcing layer of metal cords inclined at an angle of 55°–80° with respect to the cords of said carcass ply and arranged outside said carcass ply and its turnup portion in said bead portion, a composite rubber filler of hard and soft rubber stocks arranged inside said carcass ply and its turnup portions in said bead portion,

said carcass ply comprising a single rubberized layer of aromatic polyamide fiber cords and a tip of its turnup portion terminating at a position lower than an upper end of a rim flange when the tire is mounted on a rim;

one end of said metal cord reinforcing layer facing said turnup portion terminating above said tip of the turnup portion of said carcass and the other end thereof facing said carcass ply extending toward said side portion 5–30 mm above a position corresponding to said one end of the reinforcing layer facing said turnup portion; and

said hard rubber stock of the rubber filler extending above said bead ring 5–20 mm along said carcass ply above a position corresponding to the end of said metal cord reinforcing layer facing said carcass ply, and said soft rubber stock of the rubber filler extending toward said side portion 5–20 mm above said hard rubber stock and disposed between said hard rubber stock and said metal cord reinforcing layer facing said turnup portion, and a lower end of said soft rubber stock being located between said hard rubber stock and said turnup portion in a wedge shape, said tip of the turnup portion of said carcass ply being located between said metal cord reinforcing layer on one side and said wedge-shaped soft rubber stock on the other side at a region lower than the height of said flange to protect said tip of the turnup portion from bending deformation when the tire is deflected.

4,541,468

TILTER MECHANISM FOR A SLATTED BLIND

Richard N. Anderson, Owensboro, Ky., assignor to Hunter Douglas, Inc., Owensboro, Ky.

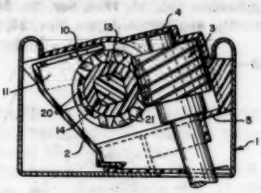
Filed Oct. 19, 1983, Ser. No. 543,341

Int. Cl.⁴ E06B *9/38*

U.S. Cl. 160—177 **5 Claims**

1. Tilter mechanism for a slatted blind, said mechanism comprising a worm gear, first mounting means rotatably mounting said worm gear, a toothed worm wheel, second

mounting means rotatably mounting said worm wheel and in normal meshing engagment with said worm gear, and resilient means allowing temporary disengagement and slippage to occur between said worm gear and said worm wheel when forces resisting rotation of said worm wheel exceed a predetermined value, said worm wheel having a consecutive series of



teeth of less height than the remainder of the teeth with said resilient means allowing disengagement between said worm wheel and said worm gear when said worm gear meshes with said teeth of lesser height at a force level less than that required to allow disengagement of said remainder of teeth from said worm gear.

4,541,469

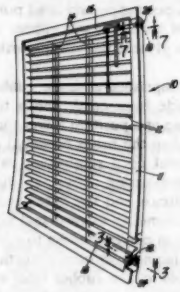
WINDOW BLIND ASSEMBLY

Larry T. Dressell, 2305 Prestwick St., Troy, Mich. 48098

Filed Oct. 3, 1983, Ser. No. 538,332

Int. Cl.[4] E06B *9/266*

U.S. Cl. 160—166 R **6 Claims**



1. A blind assembly of the type for use adjacent a window to control the passage of light, said assembly comprising; a plurality of individual and parallel strips (12), connection means (14) interconnecting said strips (12) for suspending said strips (12) in parallel spaced relationship to one another, at least one header beam (16) connected to said connection means (14) for supporting said strips (12), characterized by support means (18) attached to said header beam (16) and manually movable between a support position for engaging structure to position said header beam (16) and a retracted position for moving said header beam (16) relative to the structure, said support means (18) including a control member (20) manually movable between said support position and said retracted position, and a housing member (22) movably supporting said control member (20) and for retaining said control member (20) in said support position and allowing said control member (20) to rest in said retracted position, said control member (20) having a slide bar (24) movably longitudinally into and out of said housing member (22) between said support and retracted positions and a manually actuatable handle (26) extending from said slide bar (24) for manually moving said slide bar (24), said handle (26) extending exteriorly of said housing member (22), said housing member (22) having a retraction slot (28) for limiting movement of said handle (26) therealong, said housing member (22) having a retention pocket (30) extending laterally of said retraction slot (28) for receiving and retaining said handle (26) for maintaining said control member (20) in said support position, said housing member (22) rotatably supporting said slide bar (24) so that said slide bar (24) may be rotated relative to said housing member (22) to move said handle (26) into and out of said retention pocket (30), said retention pocket (30) having a detent (32) adjacent the juncture thereof with said retraction slot (28) for moving to allow the passage of said handle (26) into and out of said retention pocket (30), said detent (32) being formed by a projection extending into said retention pocket (30), said projection extending from a finger (34) forming one extremity of said retention pocket (30) and being flexible to allow movement of said detent (32) to allow said handle (26) to move thereby and for positioning said detent (32) to retain said handle (26) in said retention pocket (30), said housing member (22) having a face flange (36) with a front surface and rear surface engaging the end of said header beam (16) and support walls (38) extending from said rear surface and engaging the interior of said header beam (16), said retraction slot (28) and said retention pocket (30) extending through one of said support walls (38), said header beam (16) having an opening therethrough overlying said retraction slot (28) and said retention pocket (30) with said handle (26) extending therethrough for manual access exteriorly of said header beam (16), said slide bar (24) extending through said face flange (36) and exteriorly of said front face thereof.

4,541,470

METHOD OF PRODUCING SEWING MACHINE NEEDLES

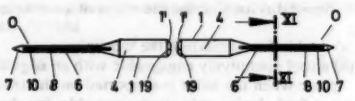
Klaus Pavel, Eynatten, Belgium, assignor to Rhein-Nadel Maschinennadel GmbH, Aachen, Fed. Rep. of Germany

Filed Sep. 1, 1983, Ser. No. 528,701

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1982, 3235154

Int. Cl.[4] B21G *1/02*

U.S. Cl. 163—5 **19 Claims**



1. A method of manufacturing sewing machine needles from a cylindrical length of wire by compression molding, comprising the steps of

providing the length of the wire substantially corresponding to two of the needles to be manufactured and a diameter of the wire corresponding substantially to the thickness of a butt of the needles to be manufactured, said length of the wire being a single piece constituting two coaxial connected needle blanks for the two needles to be manufactured,

simultaneously working said two coaxial connected needle blanks to form said two needles, each of said two needles having said butt and a needle shank and a point region at remote ends of the blank and a section between said butt and said shank, with said two coaxial connected needle blanks being worked such that said butts respectively face each other, by the steps of

reducing said length of wire constituting said two coaxial connected needle blanks approximately to a final cross-sectional dimension of the needles to be manufactured over ends of said two coaxial connected needle blanks forming said shanks and said sections of the two needles to be manufactured of said two coaxial connected needle blanks, leaving said butts of said two needles facing each other joined back to back,

said reducing step further pressing grooves in the wire from

transversely convexly curved outer surfaces of the wire within a region of said shanks while simultaneously effecting said reducing of said two coaxial connected needle blanks approximately to said cross-sectional dimension of the needles to be manufactured over said point regions, said shanks and said sections of the two needles by pressing opposite portions of the blanks at said shanks and point regions so as to form laterally projecting flat fins which leave therebetween the transversely convexly curved outer surfaces of reduced diameter substantially corresponding to said final cross-sectional dimension, and removing said flat fins in a subsequent step.

4,541,471

PROCESS FOR THE PRODUCTION OF PRECISION CASTINGS BY THE GYPSUM-MOLD PROCESS

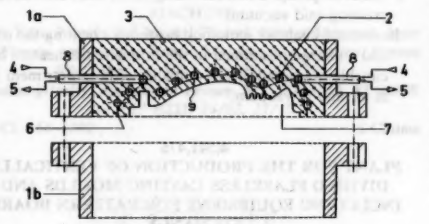
Fritz Faessle, Limburgerhof, and Siegmund Stadler, Dudenhofen, both of Fed. Rep. of Germany, assignors to Giulini Chemie GmbH, Fed. Rep. of Germany

Filed May 7, 1984, Ser. No. 608,046

Claims priority, application Fed. Rep. of Germany, May 6, 1983, 3316571

Int. Cl.⁴ B22D *9/00*

U.S. Cl. 164—6 **14 Claims**



1. A process for production of a precision casting, by which a porous foundry mold is produced from a pattern in a molding box out of a castable molding material, containing calcium sulfate hemihydrate as the bonding material, without calcination, comprising

(a) coating the pattern to be copied with a mold release agent and providing the molding box pattern with a drainage having at least one duct which extends outside the molding box;

(b) pouring the molding material into the molding box and around a portion of the drainage which is within the molding box, and solidifying the molding material in the molding box to form a solidified mold having a mold cavity;

(c) removing the water from the solidified mold by introducing compressed gas into the drainage, whereby the pattern is removed from the solidified mold, removing the pattern from the molding box, then drying the solidified mold;

(d) connecting the dried mold to a vacuum line and evacuating the dried mold; and

(e) pouring the molten metal mass into the mold cavity while the vacuum is maintained and solidifying the molten metal.

4,541,472

SYSTEM FOR STIRRING IN CONTINUOUS CASTING

Jan Erik Eriksson, Helsingborg; Mats Karlsson, Hjarnarp; Sten Kollberg, Västerås, and Bengt Mansson, Helsingborg, all of Sweden, assignors to ASEA Aktiebolag, Västerås, Sweden

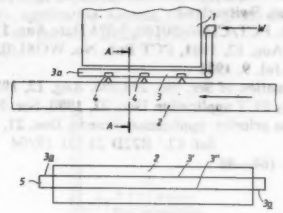
Filed Sep. 7, 1983, Ser. No. 530,003

Claims priority, application Sweden, Sep. 14, 1982, 8205237

Int. Cl.⁴ B22D *27/02, 11/124*

U.S. Cl. 164—504 **4 Claims**

1. A system for stirring in continuous casting forming a traveling continuously cast strand having a skin containing unsolidified metal, comprising a multiphase stirrer positioned opposite to the strand and having a front facing the strand and forming a space between the front and the strand, said stirrer projecting a field from said front through said skin and into said unsolidified metal and stirring said unsolidified metal, said front receiving heat from said strand, at least one set of two water cooling pipes positioned in said space side-by-side transversely in front of the stirrer's said front between said front and said strand, said pipes being electrically isolated from each other and said front, said pipes being in said field and having



circulating currents induced therein by said field, both of said pipes having ends projecting transversely beyond said field on both sides of said field and means for electrically interconnecting said ends and forming said two pipes into a closed electric loop in which the net flow of said currents is zero and do not interfere with said field, said pipes having means for supplying them with pressurized water and said pipes having nozzles pointing towards said strand and ejecting cooling water against said skin and cooling the skin as said strand travels opposite to said stirrer.

4,541,473

APPARATUS FOR SPRAYING AN AIR-WATER MIST COOLING FOR USE IN CONTINUOUS METAL CASTING

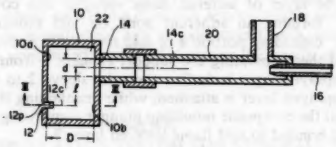
Yoshinori Onoe, Akashi; Hiroshi Takagi, Kobe; Satoru Ikenaga, Kobe; Hiraku Tsuchiya, Kobe; Shohei Murakami, Hyogo, and Masakazu Nakao, Kobe, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Feb. 23, 1984, Ser. No. 582,707

Claims priority, application Japan, Feb. 25, 1983, 58-27612[U]

Int. Cl.⁴ B22D *11/124*

U.S. Cl. 164—444 **6 Claims**



1. An apparatus for spraying an air-water mist for cooling a cast strand in continuous metal casting in which a mist atomizing nozzle is utilized which is attached to a head portion of an air-water mixture supply pipe, said apparatus comprising:

exhaust means formed in an exhaust side wall of said mist atomizing nozzle; and

introduction inlet means provided in an introduction side wall at a height position different from that of said exhaust means wherein a distance l between a central axis of said introduction inlet means and a central line passing through a midpoint of said exhaust means parallel to said central axis is set at a predetermined value so as to satisfy the following relation,

$\frac{1}{4}d<l\leq 2.5D$

wherein d is an inside diameter of the introduction inlet means and D is a distance from the introduction side wall of said mist atomizing nozzle to the exhaust side wall.

4,541,474

PROCESS FOR MANUFACTURING A MOULDING PLUNGER FOR HOLLOW GLASS OBJECTS

Michel Pecci, Cachan, France, assignor to Castolin S.A., Saint-Sulpice, Switzerland

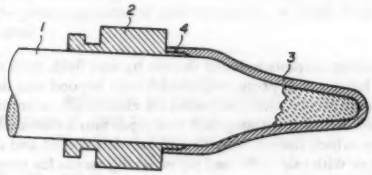
PCT No. PCT/CH80/00160, § 371 Date Aug. 12, 1981, § 102(e) Date Aug. 12, 1981, PCT Pub. No. WO81/01841, PCT Pub. Date Jul. 9, 1981

Continuation of Ser. No. 293,205, Aug. 12, 1981, abandoned. This PCT application Dec. 22, 1980, Ser. No. 582,878

Claims priority, application France, Dec. 21, 1979, 79 31546

Int. Cl.[4] B22D *23/00, 19/04*

U.S. Cl. 164—46 **11 Claims**



1. A process for manufacturing a hollow composite moulding plunger for moulding glass objects which comprises:

providing a cylindrical support element **1** having a substantially conically formed end portion with a rounded peak, said support element **1** having a removably fitted solid preform sleeve **2** thereon for use in forming said hollow composite moulding plunger, said sleeve **2** having a reduced coaxially extending annular portion **4**, said sleeve **2** being used as a base mounting for said mould plunger,

said conical end portion of the support being characterized by a releasing surface for enabling the subsequent removal of a plunger flame sprayed thereon,

flame spraying a releasably adhering layer **3** of plunger-forming material having a wall thickness ranging from about 0.5 mm to 10 mm on said conical end portion,

the layer of material flame sprayed also covering and forming an adherent bond on said reduced annular extending portion **4** of said removable sleeve,

and then separating the support element **1** from said flame sprayed layer including the solid sleeve **2** to which said sprayed layer is attached, while maintaining the integrity of the composite moulding plunger comprising said sleeve **2** bonded to said flame sprayed layer **3**.

4,541,475

METHOD OF, AND APPARATUS FOR, PRODUCING CASTINGS IN A VACUUM

John Goddard; David Mills, and Alan J. Moulden, all of Bristol, England, assignors to Rolls-Royce Limited, London, England

Filed Dec. 20, 1982, Ser. No. 451,197

Claims priority, application United Kingdom, Dec. 30, 1981, 8139034

Int. Cl.[4] B22D *27/16*

U.S. Cl. 164—65 **5 Claims**

1. Apparatus for casting in a vacuum comprising:

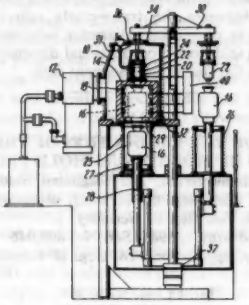
a furnace chamber;

a furnace within the chamber;

inlets in the walls of the furnace chamber through which a mould and a crucible can be positioned in the chamber;

a withdrawal chamber in open communication, without valves, with the interior of the furnace chamber through the crucible positioning inlet, and into which a filled mould can be withdrawn from the furnace for cooling;

means for sealing the inlets to enable a vacuum to be created within the furnace and withdrawal chambers;



a vacuum pump communicating with the chambers for creating said vacuum;

the furnace chamber including heaters for heating the mould and a charge positioned in the crucible, the heaters being capable of operation substantially without detriment both in air and in vacuum.

4,541,476

PLANT FOR THE PRODUCTION OF VERTICALLY DIVIDED FLASKLESS CASTING MOULDS AND INCLUDING EQUIPMENT FOR PATTERN BOARD EXCHANGE

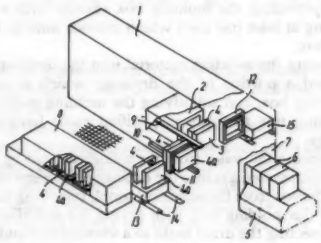
Laurits A. B. Larsen, Veddelev, Denmark, assignor to Dansk Industri Syndikat A/S, Herlev, Denmark

Continuation of Ser. No. 347,285, Feb. 9, 1982, abandoned. This application Jul. 20, 1984, Ser. No. 632,275

Claims priority, application Denmark, Feb. 20, 1981, 783/81

Int. Cl.[4] B22C *17/00*

U.S. Cl. 164—182 **3 Claims**



1. A pattern board exchange mechanism in combination with a device for producing flaskless foundry moulds having a mould part pressing chamber and a casting bed to successively receive the mould parts from the pressing chamber and to thereby form a continuous vertically divided and intermittently advanced set of moulds, the pattern board exchange mechanism comprising:

a pair of opposed pressing plates having exchangeable pattern boards for use in the pressing chamber, said pressing plates and associated exchangeable pattern boards being movable relative to the pressing chamber to a pattern board exchange position;

a first carriage guided for movement along one side of the pressing chamber between (a) a pattern board loading

position where a new pattern board is loaded on said first carriage and (b) a pattern board transfer position adjacent one of said pressing plates when said one pressing plate is located in the pattern board exchange position where the new pattern board is transferred to said one pressing plate;

a first transfer means located on said first carriage for transferring the new pattern board from said first carriage to said one pressing plate;

a second carriage guided for movement along the opposite side of the pressing chamber between (a) a pattern board transfer position adjacent said one pressing plate when said one pressing plate is located in the pattern board exchange position where a used pattern board is transferred from said one pressing plate and (b) a pattern board delivering position where the used pattern board is unloaded from said second carriage;

a second transfer means located on said second carriage for transferring the used pattern board from said one pressing plate to said second carriage; and

a carriage operation control system sensitive to codes provided on said pattern boards.

4,541,477

SOCKET CORE HANDLING AND POSITIONING DEVICE FOR A CENTRIFUGAL PIPE CASTING MACHINE

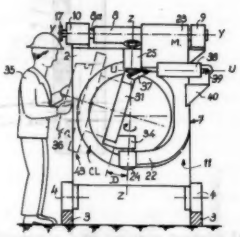
Pierre Fort, Nancy, and Michel Pierrel, Pont a Mousson, both of France, assignors to Pont-a-Mousson S.A., Nancy, France

Filed May 16, 1984, Ser. No. 610,736

Claims priority, application France, May 27, 1983, 83 08855

Int. Cl.⁴ B22D *13/02, 13/10*

U.S. Cl. 164—302 **6 Claims**



1. An apparatus for handling and positioning a socket core (**36**) in association with a machine for centrifugally casting iron pipes (**41**) having end sockets (**42***a*), comprising:

(a) an elongate machine casing (**2**),

(b) an open-ended chill-mould (**1**) rotatably mounted in the casing,

(c) a tilt support (**7**) mounted at one end of the casing for rotation about a first, horizontal axis (Y—Y) just above said one end,

(d) a first jack (**29**) mounted between the casing and the support for rotating the support between a lowered position whereat the support substantially overlies said one end, an intermediate position whereat the support is angled outwardly from said one end, and a fully raised position whereat the support extends above said one end,

(e) ring means (**31**, CL, **43**) for gripping and supporting the socket core, and mounted to the tilt support for rotation about a second axis (Z—Z) perpendicular to the first axis, said ring means having a primary plane disposed at an acute angle (D) to the second axis, and

(f) a second jack (**38**) mounted between the tilt support and the ring means for rotating the ring means between a position coaxial with the chill-mould when the tilt support is in its lowered position and a position whereat the plane of the ring means faces laterally of the chill-mould,

(g) said acute angle opening downwardly when the tilt support is in its lowered position, whereby an operator may easily and safely mount a socket core on the ring means with the tilt support in its intermediate position and the ring means in its lateral position.

4,541,478

CONTINUOUS CASTING MOULD

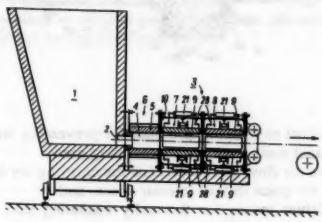
Hermann Schubert, Linz; Heinrich Thöne, Stiedelsbach, and Richard Kasmader, Auleiten, all of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Sep. 24, 1982, Ser. No. 423,009

Claims priority, application Austria, Oct. 9, 1981, 4341/81

Int. Cl.⁴ B22D *11/00*

U.S. Cl. 164—440 **7 Claims**



1. In a continuous casting mould for casting a strand, in particular a horizontal continuous casting mould for a multiple-strand casting plant, and of the type including a first mould part moulding the cross section of said strand, at least one second mould part arranged behind said first mould part in the travelling direction of said strand along a strand path, a plurality of wall parts provided in said second mould part each supporting a surface of said strand by contacting the same, each of said wall parts comprising a run-in end and a run-out end, and adjusting means for pressing said wall parts against said strand surface, the improvement wherein each said adjusting means comprises double-acting pressure medium cylinder means disposed with its longitudinal axis extending parallel to the longitudinal axis of the strand path, said pressure medium cylinder means having a piston and a cylinder, said adjusting means further comprising deflection means articulately connecting said piston to one end of said wall part and said cylinder to the other end of said wall part, whereby the action of said pressure medium cylinder means is deflected by said deflection means from the direction parallel to the longitudinal axis of said strand path into a direction approximately perpendicular to the longitudinal axis of said strand path, thereby providing a uniform adjustment force over the length of said wall part.

4,541,479

AIR CIRCULATION SYSTEM FOR GENERALLY ENCLOSED STRUCTURES

Hervin J. Bergeron, Jr., Opelousas, La., assignor to Stephen J. Ledet, Jr., St. Landry Parish and James D. Elder, Calcasieu Parish, both of, La., part interest to each

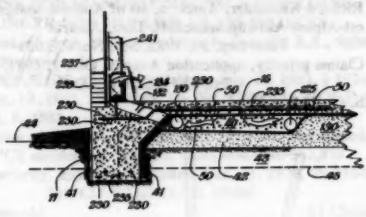
Continuation-in-part of Ser. No. 54,659, Jul. 3, 1979, Pat. No. 4,505,325, which is a continuation-in-part of Ser. No. 135,073, Mar. 28, 1980, abandoned, which is a continuation-in-part of Ser. No. 239,982, Mar. 3, 1981, , which is a continuation-in-part of Ser. No. 240,152, Mar. 3, 1981, , which is a continuation-in-part of Ser. No. 530,211, Sep. 8, 1983, , which is a division of Ser. No. 230,375, Feb. 2, 1981, Pat. No. 4,440,343. This application Aug. 13, 1984, Ser. No. 639,998

Int. Cl.⁴ F28D *17/00*

U.S. Cl. 165—45 **41 Claims**

1. An air circulation system for generally enclosed structures, as a home, having an interior space defined in part by a slab/floor, said system comprising:

a. a structurally supportive lightweight aggregate mass subsurface to the slab/floor and a structurally communicating with ground support thereunder, said mass forming a structural support for at least a portion of the slab/floor and defining an enlarged void air space between said slab/floor and the underlying ground support;
b. blower means for circulating air between said interior space and said void air space;



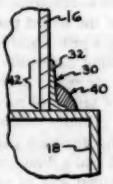
c. film sheet enveloping said mass for preventing water flow into said mass from the surrounding area;
d. return air flow conduit means for carrying air from said void air space to said interior space; and
e. insulation means for thermally insulating said void air space and said mass around the perimeter thereof and adapted to allow heat transfer between said void air space and the slab/floor and between said void air space and the underlying ground support.

4,541,480

HEAT EXCHANGER AND METHOD FOR JOINING PLATES THEREOF

Kenneth B. Beckmann, 5040 Enterprise Blvd., Toledo, Ohio 43612

Filed Dec. 22, 1982, Ser. No. 452,410
Int. Cl.⁴ B23K *31/02*; B23P *15/26*
U.S. Cl. 165—79 **13 Claims**



1. A method for joining plates of a heat exchanger to a support member comprising:
engaging each of said plates with said support member to form a joint therebetween,
depositing a material on each of said joints, said material flowing onto the portion of said plates adjacent said joint to form a first leg on each of said plates which extends up the exterior of said plates, said material also flowing onto said support member to form a base, said material adhering to said plates and support member and increasing the thickness and strength of said portion of said plates adjacent said joint,
welding said plates to said support member, said weld primarily contacting said first leg of said material and substantially avoiding contact with said plates, said weld also contacting both said base of said material and said support member to secure said plates to said support member.

9. A plate type heat exchanger comprising:
a support member, said support member having a support surface; and
a plurality of plates positioned on said support surface, said plates extending substantially perpendicular from said support surface, a layer of material deposited on said support surface and on a portion of said plates that is adjacent said support surface, said material defining a first leg on said portion of said plates and a base on said support surface, said material increasing the thickness of said portion of said plates, said plates being welded to said support member to connect said plates to said support member, said weld being located on said base and said support surface of said support member and on said first leg on said portion of said plates where said plates have increase thickness to provide a stronger more temperature resistant area of said plates for said weld.

4,541,481

ANNULAR ELECTRICAL CONTACT APPARATUS FOR USE IN DRILL STEM TESTING

Charles E. Lancaster, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Nov. 4, 1983, Ser. No. 549,527
Int. Cl.⁴ G01V *1/40*
U.S. Cl. 166—65.1 **7 Claims**

1. An electrical contact running tool apparatus for use in connection with a well tester, comprising:
an inner body structure telescopically disposed within an outer body structure;
said outer body structure carrying latch means for locating said tool within the bore of an associated well tester;
normally retracted means on said inner body structure including an annular elastomer element carrying electrical contact means on the outer periphery thereof; and
means responsive to telescoping movement of said body structures for expanding said elastomer element from its normally retracted position to an expanded position where said contact means engages a companion contact member on the well tester.

4,541,482

OFFSET OPEN BORE SIDEPOCKET MANDREL

Russell A. Johnston, Houston, Tex., assignor to Camco, Incorporated, Houston, Tex.

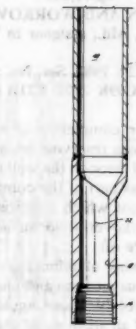
Filed Jun. 25, 1984, Ser. No. 624,074
Int. Cl.⁴ E21B *23/03*
U.S. Cl. 166—117.5 **3 Claims**

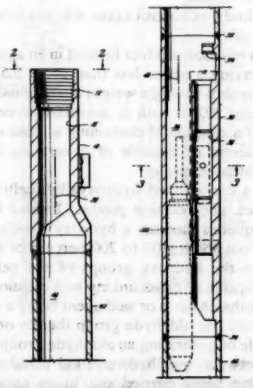
3. A well installation comprising,
a sidepocket mandrel for use in a well tubing,
said mandrel including a body having threaded connections about an end bore at each end for connection in a well

tubing, said end bores being coaxially aligned, said end bores having thickened walls,

said body having a main portion which includes an open bore and a flow control device receiving pocket offset from the open bore, said open bore having a lateral drift dimension approximately equal to the lateral drift dimension of the end bores, the longitudinal axis of the open bore being offset from the axis of the end bores,

a well tool adapted to be longitudinally moved through the mandrel, said tool having a predetermined length and a maximum outside dimension slightly less than the inside dimension of the end bores and the open bore,





said body having a space portion above and below the main body portion for allowing the passage of the well tool between an end bore and the open bore which could not pass directly between an end bore and the open bore, said space portions having a lateral drift dimension greater than the lateral drift dimension of the open bore and having a length greater than the predetermined length of the well tool whereby the tool may move laterally in the space portions for alignment with an end bore or open bore.

4,541,483

METHOD FOR STIMULATION OF OIL AND GAS WELLS WITH PHOSPHATE ESTER SURFACTANTS

William B. Walton, Cleburne, Tex., assignor to Borg-Warner Chemicals, Inc., Parkersburg, W. Va.

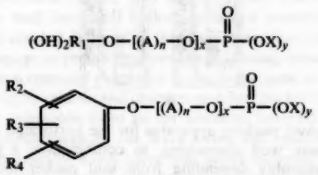
Filed Apr. 18, 1984, Ser. No. 601,413

Int. Cl.[4] E21B *43/22*

U.S. Cl. 166—263 **10 Claims**

1. A method of treating oil- and gas-bearing subterranean formations to improve permeability thereof and increase or restore production of oil or gas comprising introducing into said formation through a producing means in fluid communication with said oil- or gas-bearing subterranean formation, a treating fluid comprising:

(A) a non-aqueous solution comprising alcohol, aromatic hydrocarbon and from about 5 to about 50 weight percent of an alkyl or aralkyl polyoxyalkylene phosphate ester surfactant having the formulas:



wherein R_1 represents an alkyl radical having 10 to 18 carbon atoms, R_2 represents an alkyl radical of about 5 to about 27 carbon atoms or cycloalkyl radical and radicals derived from mineral oils containing alkyl, cycloalkyl and mixed alkylcycloalkyl radicals having from about 12 to 27 carbon atoms, R_3 and R_4 represent either hydrogen or alkyl of from about 1 to 22 carbon atoms and the higher alkyls defined by R_1 and cycloalkyls defined by R_2 or radicals derived from mineral oils; A represents the residue of ethylene oxide, ethylene oxide and tetrahydrofuran, or mixed lower alkylene oxides selected from the group consisting of ethylene oxide, propylene oxide, and butylene oxide, alone or including tetrahydrofuran, wherein the total molecular weight of said ester is about 500 to about 1500, and wherein A can be heteric or block in molecular configuration; n represents the degree of oxyalkylation; x and y are 1 or 2, the sum of x and y is 3 and z is an integer of 0 to 5; X is hydrogen or a monovalent cation selected from at least one of the group consisting of an alkali metal, alkyl amine and ammonium; and thereafter,

(B) injecting a fluid selected from water and a hydrocarbon into the pore space adjacent to the well bore in amounts sufficient to displace the non-aqueous solution of said phosphate ester out into the formation,

(C) retaining said non-aqueous solution of said phosphate ester and said hydrocarbon within said formation for a period of not less than 12 hours and

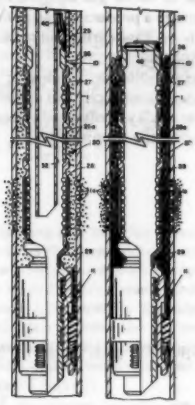
(D) thereafter, pumping and/or displacing said non-aqueous solution of said phosphate ester and said fluid from said formation into the well bore by injecting water into said formation by an injection means in fluid communication with said oil-bearing or gas-bearing subterranean formation to produce the desired oil or gas through said producing means.

4,541,484

COMBINATION GRAVEL PACKING DEVICE AND METHOD

John V. Salerni, Kingwood, and James R. Zachman, The Woodlands, both of Tex., assignors to Baker Oil Tools, Inc., Orange, Calif.

Filed Aug. 29, 1984, Ser. No. 645,271
Int. Cl.[4] E21B *34/12, 43/04*
U.S. Cl. 166—278 **10 Claims**



1. A gravel packing apparatus for the perforated zone of a subterranean well comprising, in combination: a packer; a tubular assembly depending from said packer including a screening means; packer setting means detachably associated with said packer and constructed and arranged to be run into the well by a tubular string, whereby said packer may be positioned and set with said screening means opposite the perforated zone; a gravel packing assembly depending from said packer setting means and including a crossover tool, normally extending through said screening means; means in said tubular assembly defining a generally horizontal, annular spherical segment shaped valve seat located above said screening means; a flapper valve member horizontally pivotal to said tubular assembly and having a periphery defining a spherical segment surface cooperable with said valve seat in sealing relation thereto; said crossover tool normally holding said flapper valve member in a generally vertical position out of contact with said valve seat; and resilient means urging said flapper valve toward engagement with said valve seat, whereby withdrawal of said packer setting means and said gravel packing assembly permits said flapper valve member to move into sealing engagement with said valve seat.

5. The method of gravel packing a perforated zone of a subterranean well, comprising the steps of:

1. communicating with a settable annular packer, a depending tubular assembly including a screen means, an annular spherical segment shaped valve seat concentrically disposed above said screen means and a circular flapper valve member having a spherical segment shaped periphery horizontally pivotally mounted in said tubular assembly and spring biased to move into sealing engagement with the valve seat;
2. communicating a gravel packing apparatus with a packer setting mechanism and detachably securing the packer setting mechanism to the settable packer with a member of said gravel packing apparatus extending through said valve seat and maintaining said flapper valve member in a substantially vertical, inoperative position;
3. running all of the aforesaid apparatus into the well on a tubular string to position said screen means adjacent the perforated zone;
4. setting the packer by the setting mechanism;
5. packing the perforated zone with gravel conveyed as a liquid slurry to the gravel packing apparatus through the tubular string for deposit around said screen means with the liquid component of the slurry being returned to the surface; and
6. withdrawing the packer setting mechanism and the gravel packing apparatus from the well, thereby permitting said flapper valve member to move into sealing engagement with said valve seat to prevent entry of fluids or contaminates into the perforated zone during and after removal of the gravel packing apparatus.

4,541,485

COMPLETION AND WORKOVER FLUID

Jacob Block, Rockville, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Jun. 24, 1983, Ser. No. 507,352
Int. Cl.[4] C09K *7/02;* E21B *43/27*
U.S. Cl. 166—281 **24 Claims**

1. In the method for completion or workover of a well penetrating a subterranean reservoir wherein a completion or workover fluid is passed through the well into contact with the subterranean reservoir as part of the completion or workover method, the improvement which comprises (1) employing as the completion or workover fluid an aqueous composition comprising an admixture of:

(a) a hydroxy containing aluminum component formed by mixing in an aqueous medium and under a high degree of agitation a water-soluble basic agent selected from the group consisting of an alkali metal aluminate, alkali metal hydroxide, ammonium hydroxide and mixtures thereof with a water-soluble acidic agent selected from an inorganic acid, aluminum chloride, aluminum sulfate, aluminum nitrate, their hydrates and mixtures thereof; at least one of said basic and acidic agents being an aluminum containing compound: said acidic and basic agents being reacted in a ratio such that the resultant product imparts to said aqueous medium a pH of from at least about 8 to about 10.3, said component being present in the aqueous composition in an amount of from about 0.5 to 10 weight percent; and

(b) a fluid loss control agent selected from the group consisting of

(i) a reaction product formed in an aqueous acidic medium having a pH of less than about 5.5 between polyvinyl alcohol having a weight average molecular weight of at least 20,000 with at least 0.01 percent of stoichiometry of a compound containing at least one aldehyde group therein or capable of generating in situ at least one aldehyde group;

(ii) a cross-linked hydroxyalkyl cellulose reaction product, said reaction product formed by contacting in an aqueous medium a hydroxy C_1–C_3 alkyl cellulose and from about 0.01 to 200 percent of stoichiometry based on the hydroxy groups of the cellulose of an agent capable of cross-linking said cellulose, said agent being epihalohydrin or said agent being a compound having a least one aldehyde group therein or a compound capable of generating an aldehyde group in situ; the reaction between said hydroxyalkyl cellulose and ephihalohydrin being carried out in an aqueous basic medium having a pH of about 9.5 or more and the reaction between said hydroxyalkyl cellulose and said compound having or capable of generating at least one aldehyde group therein being carried out in an aqueous acidic medium having a pH of about 5.5 or less; and

(iii) mixtures therof; said fluid loss control agent being present in the aqueous composition in an amount of about 0.3 to 5 weight percent; and

(2) displacing said completion or workover fluid and treating the well with acid to dissolve away any solid cake

layer from the completion or workover fluid that has deposited on the walls of the well.

4,541,486

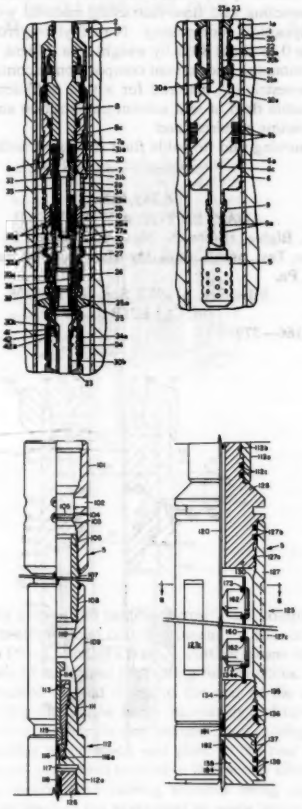
ONE TRIP PERFORATING AND GRAVEL PACK SYSTEM

Rodney J. Wetzel, Woodlands, and Gregg W. Stout, Montgomery, both of Tex., assignors to Baker Oil Tools, Inc., Orange, Calif.

Division of Ser. No. 266,267, Apr. 7, 1982, , which is a continuation-in-part of Ser. No. 250,772, Apr. 3, 1981,. This application Jun. 6, 1983, Ser. No. 501,261

Int. Cl.[4] E21B *43/04, 43/117*

U.S. Cl. 166—297 **25 Claims**



1. In an apparatus for use in a well bore and adapted to be run into the well casing on a tubular work string and in a single run-in of said string in said well accomplish perforation of the well casing adjacent a production zone and placement of a gravel pack in the casing adjacent the interior of the casing perforations, comprising, in combination: an axially elongated tubular liner assembly including a hollow screen element; a first packer secured to the lower end of said tubular liner assembly below said hollow screen, said first packer being initially settable in engagement with the casing bore at a position above the production zone; a tubular housing assembly secured in concentric depending relation to said first packer by a conduit, said tubular housing assembly defining a vertical axis, cylindrical chamber to house perforating charges, the top end of said chamber including a percussion operated detonator; a tubular carrier of polygonal cross sectional configuration concentrically insertable in said chamber, said carrier having N faces where N is an even number in excess of four; means for positioning said carrier in fixed equispaced relationship to the cylindrical wall of said cylindrical chamber; each of the N faces of said carrier having vertically spaced apertures for mounting thereon a selected number of shaped charge containers in a vertical array, there being only N/2 apertures having their axes disposed in a common horizontal plane at the level of each aperture, whereby the shaped charge containers may be positioned in a plurality of vertically spaced, horizontal groups with the shaped charge containers in each horizontal group angularly displaced from the shaped charge containers in the vertically adjacent group; means responsive to said percussion operated detonator for discharging all said shaped charges contained in each said horizontal group; a second packer secured to the upper end of said tubular liner assembly; a work string supported setting tool releasably connected to said packer; a hollow crossover mandrel assembly depending from said setting tool; said setting tool having pressure responsive means for expanding said second packer into sealing engagement with the well casing, said crossover mandrel assembly being insertable in said liner assembly; said first and second packers, said liner, said hollow crossover mandrel assembly and said conduit defining, in their run-in position, a continuous axial passage to permit dropping an activating means onto said percussion operated detonator to discharge same and perforate the casing by said shaped charges; said first packer being subsequently releasable from its set position, lowered below the casing perforations by the work string and resettable in said lowered position; a ball valve seat sleeve mounted in the bore of said hollow mandrel assembly; means for retaining said sleeve in an initial run-in position, said sleeve receiving a dropped ball in sealing relation after the perforating operation, thereby permitting build up of fluid pressure in the work string; said second packer being then expandable by said fluid pressure into sealing engagement with said casing above said casing above said perforations; said liner assembly and said hollow crossover mandrel assembly having flow passages and spaced sealing means selectively positionable upon movement of said ball valve seat sleeve downwardly relative to said second packer from said initial run-in position to a second position for directing gravel carrying fluid flowing downwardly through the work string into the well bore between said first and second packers, thence through said screen into the bottom of said crossover mandrel assembly, and thence outwardly into the well casing annulus at a point above said second packer, thereby permitting the packing of gravel around said hollow screen; and said ball valve seat sleeve being shiftable to said second position upon a further increase in fluid pressure in said work string.

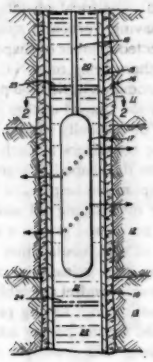
11. A well casing perforating gun employing shaped explosive charges to perforate the well casing and adjacent formation, comprising an outer tubular housing assembly concentrically insertable in the well casing and defining a vertical axis cylindrical chamber, a tubular carrier of polygonal cross sectional configuration insertable in said chamber, said carrier having N faces where N is an even number in excess of four, means for positioning said carrier in concentric relationship to the cylindrical wall of said cylindrical chamber, each of the N faces of said carrier having apertures for mounting a selected number of shaped charge containers in vertical array, whereby the shaped charge containers may be positioned in a plurality of vertically spaced, horizontal groups with the shaped charge containers in each horizontal group angularly displaced from the shaped charge containers in the vertically adjacent group, and means for discharging all said shaped charges contained in each said horizontal group.

4,541,487

WELL PERFORATING METHODS

Lowell W. Revett, LaFayette, La., assignor to Halliburton Company, Duncan, Okla.

Filed Feb. 6, 1984, Ser. No. 577,438
Int. Cl.[4] E21B *43/117*
U.S. Cl. 166—297 **7 Claims**



1. A method for increasing the probability of perforating existing vertical fractures outside well casing in a cased well borehole in earth formations traversed by a well bore comprising:

disposing a suspension of NaCl crystals in a fluid over an interval of a well bore where it is desired to perforate the surrounding earth formations, said crystals being sized to bridge over a perforation;

disposing perforating means in said interval where said perforating means are arranged, upon activation, to produce penetrations in the circumference of a cased well bore along a vertical section of the cased well, said perforating means being spaced longitudinally with respect to one another with respect to said vertical axis and being azimuthally oriented with respect to one another to provide penetrations at angles of approximately 15° with respect to said vertical axis; and

maintaining the hydraulic pressure of said fluid in said interval greater than the expected pressure of the earth formations to be perforated.

4,541,488

PROCESS FOR INCREASING THE WATER DISCHARGE OF WATER DELIVERING DRILLED WELLS, PREVIOUSLY USED FOR WATER DELIVERY, AND HAVING DECREASED WATER DISCHARGE

Pál Gömöry; János Hegedüs; Ferenc Kiss, and Attila Simon, all of Budapest, Hungary, assignors to Generalimpex, Budapest, Hungary

PCT No. PCT/HU81/00049, § 371 Date Oct. 14, 1983, § 102(e) Date Oct. 14, 1983, PCT Pub. No. WO83/02296, PCT Pub. Date Jul. 7, 1983
PCT Filed Dec. 26, 1981, Ser. No. 552,135
Int. Cl.[4] E21B *21/00, 43/27*
U.S. Cl. 166—307 **5 Claims**

1. A process for increasing the water discharge of a drilled well, previously used for water delivery, and having decreased water discharge, which comprises the following steps:

(a) introducing into a filter section of the well a weak acid whose dissociation constant is less than $K_D = 10^{-3}$ for a period of 10 to 48 hours under pressure;

(b) flushing the filter section of the well by means of a scavenging pump to remove the weak acid;

(c) introducing into the filter section a basic solution of sodium bicarbonate or sodium hypochlorite or mixtures thereof for a period of 1 to 36 hours; and

(d) again, flushing the filter section of the well by means of a scavenging pump to remove the basic solution.

4,541,489

METHOD OF REMOVING FLOW-RESTRICTING MATERIALS FROM WELLS

Yulin Wu, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 19, 1984, Ser. No. 590,828
Int. Cl.[4] E21B *21/00, 37/06*
U.S. Cl. 166—312 **22 Claims**

1. A method of removing flow-restricting material from a well penetrating a subsurface earth formation which has been treated with an epoxy resin composition comprising;

(a) contacting said flow-restricting material with a solvent composition comprising N-methyl-2-pyrrolidone and from 0 to about 80% by weight of a diluent;

(b) maintaining said solvent composition in contact with said flow-restricting material for a time sufficient to form a flowable fluid of said solvent composition and said flow-restricting material; and

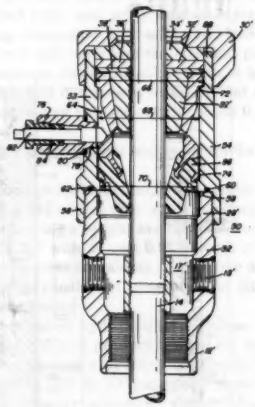
(c) removing said flowable fluid from said well.

4,541,490

ADAPTER FOR A WELLHEAD

Burke N. Bigbie, Hobbs, N. Mex., and Gilbert R. Boyd, Waxahachie, Tex., assignors to Joy Manufacture Company, Pittsburgh, Pa.

Filed Sep. 6, 1983, Ser. No. 529,305
Int. Cl.[4] E21B *33/04*
U.S. Cl. 166—379 **5 Claims**



1. Apparatus for facilitating screwed typed wellhead operations having a production tubing string comprising:

a head, having a radial production outlet port, extending upwardly from a well bore;

a continuous annular stripper rubber, self sealing with respect to said tubing and supportable within an adapter;

a slip assembly supportable within said adapter, said slip assembly and stripper rubber directly engaging the same production tubing string,;

said adapter being sealingly affixed to thread onto and extend upwardly from said head, and having upper means for supporting said slip assembly within said adapter and lower means for supporting said stripper rubber within said adapter in a manner such that said stripper rubber is selectively insertable into and removable from said

adapter through the top of said adapter without obstruction by said adapter; and

means radially insertable into said adapter for selectively restraining upward motion of said stripper rubber when said stripper rubber is supported on said lower support means, said selective restraining means including a plurality of removable barrels extending radially from said adapter, each said barrel having a hold down screw extendable into said adapter.

4,541,491

PLOW

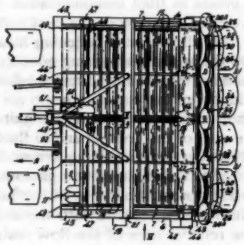
Cornelis van der Lely, 7 Brüschenrain, Zug, Switzerland

Filed Sep. 4, 1980, Ser. No. 184,176

Claims priority, application Netherlands, Sep. 7, 1979, 7906694

Int. Cl.⁴ A01B *15/08, 17/00*

U.S. Cl. 172—33 **8 Claims**



1. A plow for cutting and turning furrow slices comprising a frame having multiple point coupling means for connection to the points of a lifting hitch of a tractor, cutting means adjacent the forward side of said frame for cutting furrow slices, elevating means mounted on said frame to the rear of the cutting means for moving the furrow slices rearwardly and upwardly to at least one furrow slice turning member, said turning member being rotatably mounted on said plow to the rear of said cutting means and positioned to receive the furrow slices from said elevating means, said turning member being rotatable about an axis inclined to the horizontal to guide furrow slices downwardly to the ground at the rear of the machine, a plurality of turning members mounted side-by-side, each said turning member being a hollow drum and said driving means comprising rollers that engage the cylindrical surfaces of said drum to rotate same, variable driving means connected to rotate each said turning member, said drums being mounted in pairs and said driving means including a transverse shaft that is rotated by a hydraulic motor, respective drive shafts for each pair of said drums being engaged by said transverse shaft and each drive shaft mounting a grooved drive roller that engages a corresponding flanged ring around the outer side of each drive of said pair to rotate same, whereby said furrow slices are turned through a pre-selected angle during operation, said slices being deposited to the rear of the plow in the furrows being formed during cutting, said driving means being connectable to the power take-off of the tractor.

4,541,492

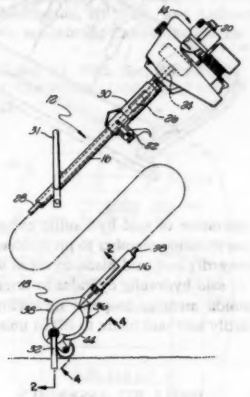
EARTH-WORKING TOOL HEAD

John Motruk, Whittier, Calif., assignor to Hawaiian Motor Company, Long Beach, Calif.

Filed Oct. 26, 1982, Ser. No. 436,881

Int. Cl.⁴ A01B *35/00*

U.S. Cl. 172—41 **32 Claims**



1. A powered earth-working tool for operation by a standing operator, comprising:

a prime mover;

an elongated shaft operatively connected to said prime mover for rotation by said prime mover;

a housing having an opening for receiving said shaft;

at least one gripping member positioned between said prime mover and said housing at a level for grasping by the standing operator;

a driver gear in said housing fixed to said shaft for rotation with said shaft about an axis;

an axle in said housing angularly disposed with respect to said axis of rotation of said driver gear;

a driven gear in said housing fixed to said axle to mesh with said driver gear and rotate said axle;

a pin mounted to move with said rotation of said axle, offset from the axis of said axle;

a spindle in said housing disposed substantially parallel to said axle;

a connecting rod having an opening to receive said pin and being mounted to swing from said spindle with said movement of said pin; and

an earth-working member fixed to said connecting rod to swing from said spindle in a pendulum-like oscillation.

4,541,493

BULLDOZER TILT MECHANISM

Joseph R. Den Bleyker, Stevensville, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Jun. 28, 1984, Ser. No. 625,480

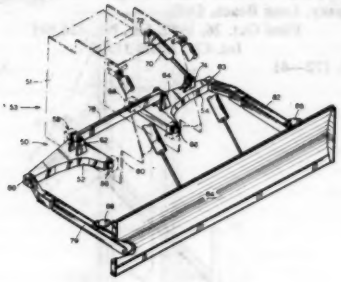
Int. Cl.⁴ A01B *3/76*

U.S. Cl. 172—824 **3 Claims**

1. A bulldozer having a main frame, a pair of trunnion members pivotally mounted on the main frame about longitudinal axes and projecting outwardly on opposite sides of the main frame, a pair of push beams connected at the outer ends of the trunnion members and extending forwardly, and a blade supported by the push beams, comprising

a tilt beam pivotally connected at its extremities between the said two trunnion members, and

a hydraulic cylinder pivotally connected between said main frame and one of said trunnion members,



whereby operation of said hydraullic cylinder to extend it causes one trunnion member to pivot downwardly and the other upwardly and said blade to tilt in unison, and

operation of said hydraulic cylinder to retract it causes said one trunnion member to pivot upwardly and the other downwardly and said blade to tilt in unison.

4,541,494

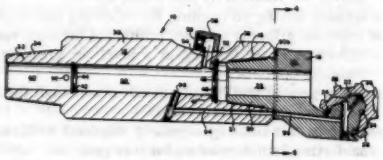
DRILL BIT ASSEMBLY

Donald D. Drummond, Jasper; Walter F. Johnsey, and Roy W. Wood, both of Birmingham, all of Ala., assignors to Drumco, Jasper, Ala.

Filed Oct. 19, 1982, Ser. No. 435,239

Int. Cl.[4] E21B *10/24*

U.S. Cl. 175—228 **29 Claims**



1. A bit assembly for a rotary drill having a source of gaseous fluid under pressure, the bit having at least one rotary cutting cone for drilling into a hard material, the bit assembly comprising:

an elongated housing having a drill end adapted for engagement with the drill and the tool end for receiving a bit having at least one cutting cone for engaging the material to be drilled;

a plenum chamber within the housing for receiving a supply flow of the pressurized gaseous fluid from the fluid source;

pressure reducing means comprising a flow restricting orifice in the plenum chamber to provide a reduced pressure and reduced quantity of flow;

first conduit means in fluid communication with the flow restricting orifice for directing the reduced flow from the pressure reducing means out of the housing into the area of the cutting cone for impingement upon the material to pick up and remove dust and cuttings from the vicinity of the cutting cone;

second conduit means comprising at least one passage through the wall of the housing above the orifice and having a nozzle outlet positioned for discharging a flow of the pressurized gaseous fluid out of the housing remote from the cutting cone and toward the drill end of the housing;

the relative sizes of the flow restricting orifice and the nozzle outlet being such that the first gaseous fluid flow is sufficient in quantity and velocity for conveying the dust and, cuttings removed from the vicinity of the cutting cone into the second gaseous fluid flow, and the second fluid flow is of a high velocity from the nozzle outlet and a quantity sufficient to combine with the first fluid flow for conveying the dust and cuttings out of the drill hole.

23. A bit assembly for a rotary drill having a source of gaseous fluid under pressure, the bit having at least one bearing-mounted rotary cutting cone for drilling into a material, the bit assembly comprising:

a housing having a drill end adapted for engagement with the drill and a tool end for receiving a bit having the at least one cutting cone, the at least one cutting cone being supported by bearings;

a plenum chamber within the housing for receiving a supply flow of pressurized gaseous fluid from the gaseous fluid source;

pressure reducing means comprising a flow restricting orifice within said plenum chamber to provide a reduced pressure and a reduced quantity of flow;

first conduit means in fluid communication with the flow restricting orifice for directing a first reduced gaseous fluid flow from the pressure reducing means out of the housing into the area of the cutting cone forimpingement upon the material to pick up and remove dust and cuttings from the vicinity of the cutting cone;

second conduit means comprising at least one passage through the wall of the housing and in fluid communication with the plenum chamber upstream from the flow restricting orifice for discharging a gaseous fluid flow of the pressurized gaseous fluid out of the housing remote from the cutting cone and toward the drill end of the housing, the relative sizes of the flow restricting orifice and the nozzle outlet being such that the first gaseous fluid flow is sufficient in quantity and velocity for conveying the dust and cuttings removed from the vicinity of the cutting cone into the second gaseous fluid flow, and the second fluid flow is of a high velocity from the nozzle outlet and of a quantity sufficient to combine with the first fluid flow for conveying the dust and cuttings out of the drill hole;

storage means within the housing for receiving and storing a supply of lubricating fluid;

distribution conduit means extending between the storage means and the bearings of the at least one cutting cone for permitting lubricating fluid to flow from the storage means to the cutting cone bearings;

third conduit means extending from the plenum chamber to the distribution conduit means for receiving a flow of gaseous fluid from the plenum chamber; and

means for combining the flow of gaseous fluid from the said third conduit means with the lubricating fluid to provide a gaseous fluid and lubricating fluid mixture in the distribution conduit means conveyed to the bearings of the cutting cone.

4,541,495

WEIGHING APPARATUS OF THE VIBRATORY STRING TYPE

Ernst Willi, Oberdürnten, and Hans-Ulrich Flückiger, Hombrechtikon, both of Switzerland, assignors to Mettler Instrumente AG, Greifensee, Switzerland

Filed Feb. 1, 1984, Ser. No. 575,949

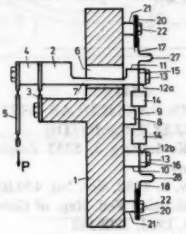
Claims priority, application Switzerland, Apr. 26, 1983, 2224/83

Int. Cl.[4] G01G *3/16*

U.S. Cl. 177—210 FP **7 Claims**

1. Weighing apparatus of the vibratory string type, comprising

(a) a frame (1);
(b) a movable load transmitting member (2) connected for movement relative to said frame;
(c) a vibratory string (9);
(d) clamping means (12*a*, 12*b*) for connecting spaced intermediate portions of said string with said movable member and with said frame, respectively, remote terminal ends (17, 18) of said string extending beyond said clamping means, respectively;
(e) a printed circuit board (20);



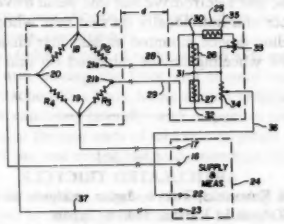
(f) means (21, 22) mounting said circuit board on said frame adjacent said string;
(g) means (19) including an oscillator for vibrating said string and for detecting variations in the string frequency as a function of the load applied to said movable member, said vibrating and detecting means being mounted on said circuit board; and
(h) means including a pair of electrical conductors (23, 24) mounted on said printed circuit board connecting, without wires, the terminal end portions of said string with said vibrating and detecting means, respectively.

4,541,496

MEASUREMENT CIRCUIT FOR LOAD CELL MASS COMPARATOR

Howard P. Layer, Derwood, Md., assignor to Frazier Precision Instrument Company, Inc., Gaithersburg and Holometrics Inc., Derwood, both of, Md.

Filed Mar. 12, 1984, Ser. No. 588,219
Int. Cl.[4] G01G *3/14*; G01L *1/22*
U.S. Cl. 177—211 **12 Claims**



1. A temperature compensated load sensing circuit for a load cell mass comparator including a load cell containing a plurality of strain gauges connected to form arms of a bridge circuit connected to a measuring circuit, comprising the combination of:

a pair of series connected resistance means coupled between the output side of the strain gauges in a first of two adjacent arms of said bridge circuit, said resistance means being of a relatively low resistance value compared to the resistance value of said strain gauges;

potentiometer means shunted across at least one of said pair of series connected resistance means, said potentiometer means having a relatively large resistance value compared to the resistance value of said resistance means and further including an adjustable voltage output terminal; and

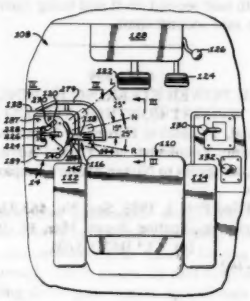
means connecting said output terminal of said potentiometer means and the output side of the strain gauges in the second of two adjacent arms of said bridge circuit to said measuring circuit.

4,541,497

CONTROL MECHANISM FOR OPERATING A TRACTOR

Craig W. Riediger, Pekin; Ervin E. Mangus, Brimfield; Gerald P. Simmons, Washington, all of Ill., and Anthony J. Knock, Davenport, Iowa, assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sep. 13, 1982, Ser. No. 619,168
Int. Cl.[4] B62D *11/04*; G05G *9/00*
U.S. Cl. 180—6.48 **36 Claims**



1. A control mechanism for operating a tractor having an operators seat, comprising:

a steering selector apparatus including an upstanding member and a tiller arm connected to and extending outwardly from the upstanding member, the tiller arm having a mounting portion and a handgrip portion, the handgrip portion having a first axis and being supported on the mounting portion for rotation about the first axis;

support means for connecting the upstanding member to the tractor for rotational movement solely about a fixed upstanding second axis;

first control means for steering the tractor in response to swinging movement of the tiller arm from a central position wherein the handgrip portion extends generally laterally to a forwardly located position steering the tractor in one direction and to a rearwardly located position steering the tractor in the other direction; and

second control means for selectively changing at least one of the speed of the tractor and the direction of the tractor in response to rotational movement of the handgrip portion about the first axis.

4,541,498

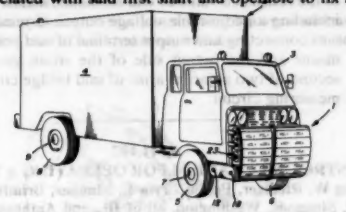
APPARATUS FOR INCREASING VEHICLE MOBILITY

A. H. Pitchford, 5905 SW. Mapp Rd., Palm City, Fla. 33490

Filed Oct. 11, 1983, Ser. No. 540,329
Int. Cl.[4] B62D *55/04*, *55/02*
U.S. Cl. 180—9.26 **20 Claims**

1. Apparatus for increasing vehicle mobility with the vehicle having a vehicle frame and comprising a framework, a first shaft rotatably mounted on said framework, a second shaft rotatably mounted on said framework and disposed generally parallel to said first shaft, a power source operable to rotate said first shaft, means interconnecting said first and second shafts to impart rotation to said second shaft, at least one wheel fixed to said second shaft and being coaxial therewith, track

means mounted on the periphery of said wheel, a first brake means associated with said first shaft and operable to fix said



framework to said vehicle frame, and a second brake means associated with said second shaft and being operable to fix said framework to said second shaft.

4,541,499

VEHICULAR POWER STEERING HAVING STEERING EFFORT CONTROL SYSTEM

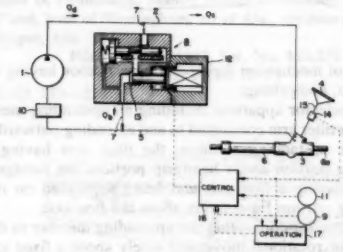
Tokiyoshi Yanai, Yokosuka; Hirotsugu Yamaguchi, Chigasaki; Masato Fukino, Yokohama, and Yutaka Aoyama, Yokosuka, all of Japan, assignors to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Feb. 2, 1983, Ser. No. 463,236

Claims priority, application Japan, Mar. 18, 1982, 57-43391

Int. Cl.⁴ B62D *5/06*

U.S. Cl. 180—142 **4 Claims**



1. A vehicular power steering system comprising:

a steering mechanism including a steering wheel,

hydraulic actuator means having a power cylinder for transmitting mechanical work converted from hydraulic power to said steering mechanism for providing power assistance,

hydraulic fluid supplying means having a fluid pump,

servo valve means, connected with said fluid pump through a supply fluid conduit and a return fluid conduit, for controlling the fluid flow from said pump and introducing a fluid pressure to said power cylinder in accordance with movement of the steering wheel,

bypass control valve means, disposed in a bypass fluid conduit connected between said supply conduit and said return conduit to bypass said servo valve means, for controlling the rate of a fluid flow through said bypass conduit thereby to control the degree of power assistance by controlling the fluid supply to said servo valve means,

speed sensing means for sensing the speed of the vehicle,

angular velocity sensing means for sensing the angular velocity of the steering wheel, and

control means, connected with said vehicle speed sensing means and said angular velocity sensing means, for producing a control signal which is provided to said bypass control means to control the bypass flow rate in accordance with the sensed vehicle speed and the sensed angular velocity of the steering wheel, in such a manner that the bypass flow rate is controlled to be equal to the algebraic sum of a basic quantity which increases as the sensed vehicle speed increases minus a required quantity which is required by a volume increase of a power chamber of the power cylinder due to a movement of a power piston of the power cylinder and which is a function of the angular velocity of the steering wheel, plus a correction quantity which is determined in accordance with the sensed vehicle speed and the sensed angular velocity of the steering wheel.

4,541,500

BICYCLE, IN PARTICULAR WITH AN ELECTROMOTOR

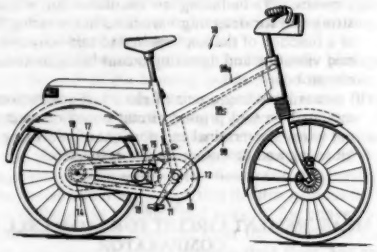
Egon Gelhard, Zum Kelderberg 3, 5352 Zülpich-Dürscheven, Fed. Rep. of Germany

Filed Nov. 8, 1982, Ser. No. 440,030

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1981, 3144884; Mar. 9, 1982, 3208345

Int. Cl.⁴ B62M *7/12*

U.S. Cl. 180—205 **26 Claims**



1. A bicycle having a rear wheel boss and a drive, said drive comprising: a pedal drive including a first chain plate which engages a chain that in turn engages and drives said rear wheel boss; an electrodrive including an electromotor having a free wheeling device and which drives a second chain plate which in turn drives said chain which engages and drives said rear wheel boss, said electrodrive and said pedal drive being operable together and individually on said rear wheel boss; a first free wheeling device mounted on said first chain plate; and a second free wheeling device mounted on said second chain plate.

4,541,501

ARTICULATED TRICYCLE

Katsuyoshi Kawasaki, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 472,716, Mar. 7, 1983, abandoned. This application May 29, 1984, Ser. No. 615,691

Claims priority, application Japan, Mar. 17, 1982, 57-42276; Mar. 25, 1982, 57-47742

Int. Cl.⁴ B62D *61/08*; B62K *5/04*

U.S. Cl. 180—215 **11 Claims**

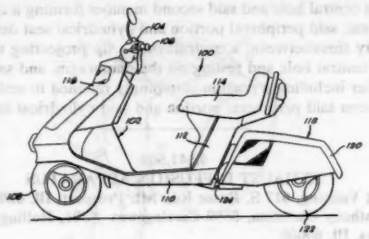
1. A tricycle comprising

a front body;

a rear body including a first body member pivotally mounted to said front body about a longitudinal axis and a second body member pivotally mounted to said first body member about a transverse axis;

an engine mounted to said first body member; and

a power train mounted to said second body member, said engine and said power train being coupled about said



transverse axis so as to allow power transmission therebetween.

4,541,502

REAR AXLE SUPPORTING STRUCTURE IN THREE-WHEELED MOTOR VEHICLE

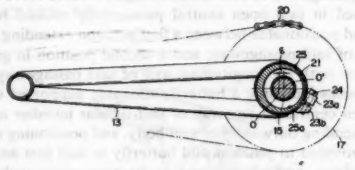
Kazuhiro Iwai; Tatsuo Masuda, and Shinji Takayanagi, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 26, 1983, Ser. No. 498,253

Claims priority, application Japan, May 31, 1982, 57-80284[U]; Jun. 3, 1982, 57-82525[U]

Int. Cl.⁴ B62D *61/08*

U.S. Cl. 180—217 **7 Claims**



1. A rear axle supporting structure in a three-wheeled motor vehicle having two rear wheels and a drive chain for driving said two rear wheels, comprising:

a swing arm including a pair of right and left side members, said swing arm having the front end thereof vertically pivotably attached to a body frame of said vehicle;

a pipe member extending laterally with respect to said vehicle and fixed to the rear ends of said side members so as to interconnect the rear ends of said side members with each other;

a bearing holder member adapted to be rotatably fitted in and supported by said pipe member and having an eccentric bore which has an axis eccentric with respect to the axis of said pipe member;

said bearing holder member being provided with bearings in said eccentric bore, said bearings being spaced apart from each other laterally with respect to said vehicle;

means for clamping said bearing holder member to said pipe member;

a rear axle for said two rear wheels, said rear axle being rotatably fitted in said eccentric bore concentrically therewith through said bearings; and

a driven sprocket fixed on said rear axle and operatively cooperating with said drive chain so as to be driven thereby.

4,541,503

FOUR-WHEEL DRIVE AUTOMOBILE

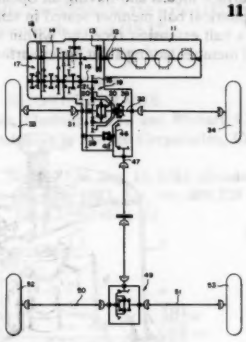
Hitoshi Akutagawa; Masayoshi Shigemasa, and Hiroaki Hayashi, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Sep. 27, 1983, Ser. No. 536,380

Claims priority, application Japan, Sep. 27, 1982, 57-169090

Int. Cl.⁴ B62K *5/04, 17/34*

U.S. Cl. 180—249 **11 Claims**



1. A four-wheel drive automobile which comprises an engine unit disposed with a crankshaft extending transversely of the automobile; transmission gear means having input shaft means driven through clutch means by said crankshaft, output shaft means having drive gear means, and change gear means disposed between said input shaft means and said output shaft means, said transmission gear means being arranged so that said input and output shaft means extend transversely of the automobile, inter-axle differential gear means comprised of a planetary gear mechanism having a rotating axis and including a ring gear, a sun gear, pinion means engaged with said ring and sun gears, and a pinion carrier for rotatably carrying said pinion means, said ring gear being engaged with said drive gear means of said transmission gear means, front differential gear means having output members connected with right and left front wheels and an input member carried by said pinion carrier of said inter-axle differential gear means to be driven thereby, rear differential gear means having output members connected with right and left rear wheels and an input member adapted to be driven by said sun gear, differential gear lock means for releasably connecting said ring gear and said pinion carrier of said inter-axle differential gear means, said inter-axle differential gear means, said front differential gear means and said differential gear lock means being arranged coaxially with one another, said differential gear lock means being provided in a part of said inter-axle differential gear means which is positioned at a side of said front differential gear means.

4,541,504

DEVICE FOR ACTIVATING A SWITCHING ELEMENT BY A DECELERATION THEREOF

Jakob Lassche, 45, Wiesenwegle, 7230 Schramberg, Fed. Rep. of Germany

PCT No. PCT/NL82/00006, § 371 Date Nov. 10, 1982, § 102(e) Date Nov. 10, 1982, PCT Pub. No. WO82/03134, PCT Pub. Date Sep. 16, 1982

PCT Filed Mar. 4, 1982, Ser. No. 442,199

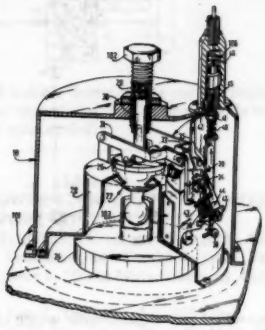
Claims priority, application Netherlands, Mar. 11, 1982, 8101192

Int. Cl.⁴ G05G *15/02*

U.S. Cl. 180—268 **14 Claims**

1. In a safety system, the combination of a housing having a base plate portion and an annular guide surface means in spaced parallel relation to said base plate portion, a disc shaped

mass captive between said base plate portion and said annular guide surface means and having an upstanding tubular member extending upwardly through the center of said annular guide surface means so that the disc is movable in a generally horizontal plane within the limits dictated by engagement of said tubular member with said guide surface means, said housing also including ball seat means concentric with said annular guide surface means and having an opening centrally thereof, a semispherical ball member seated in said ball seat means and having a ball extension received within said tubular member, said ball member having a flat upper surface disposed generally



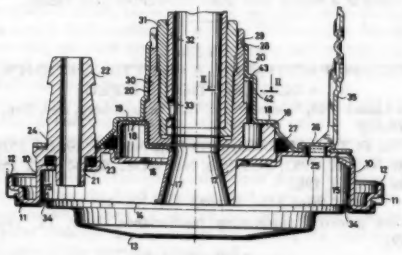
horizontally when said ball extension is centered with respect to said annular guide surface means, said housing also incuding a guide sleeve above said flat upper surface and concentric with said annular guide surface means, a plunger reciprocably received in said guide sleeve and having a button-like lower end engaging said flat upper surface so that said plunger is moved upwardly as said disc is moved from its home position and said flat upper surface is tilted, spring means urging said plunger downwardly for normally urging said disc to its home position, and means responsive to upward movement of said plunger for actuating a safety device.

4,541,505

ACOUSTIC UNIT BASE FOR ELECTROPNEUMATIC HORNS

Leonardo Beltrame, Via Breganzola 11, Arcugnano, Vicenza, and Attilio Granziera, Camisano Vicentino, both of Italy, assignors to Leonardo Beltrame, Arcugnano, Italy, a part interest

Filed Jul. 28, 1983, Ser. No. 517,901
Claims priority, application Israel, Aug. 27, 1982, 23013 A/82
Int. Cl.⁴ G10K *11/00*
U.S. Cl. 181—179 **13 Claims**



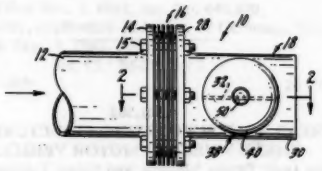
1. An improved acoustic unit base for electropneumatic horns comprising a main body peripherally seamed to an end piece with a diaphragm therebetween, said main body being formed by a first and a second member of deep-drawn sheet metal, said first member comprising a peripheral portion defining a central hole and said second member forming a cylindrical seat, said peripheral portion and cylindrical seat defining a cavity therebetween, a bush having a lip projecting through said central hole and resting on the diaphragm, and said bush further including a portion clampingly retained in said cavity between said peripheral portion and said cylindrical seat.

4,541,506

EXHAUST DIFFUSION APPARATUS

Scott Venning, 617 S. Busse Rd., Mt. Prospect, Ill. 60056, and Anthony Christian, 5500 Carriageway #301, Rolling Meadows, Ill. 60008

Filed Apr. 21, 1982, Ser. No. 370,160
Int. Cl.⁴ F01N *1/00*
U.S. Cl. 181—254 **3 Claims**



1. An exhaust diffusion device comprising a diffusion section including a plurality of annular rings defining a central passageway in communication with an engine exhaust system, said rings adapted to be retained in spaced apart relation to define a series of transverse open annular passageways; a tubular body defining an open central passageway communicating with the central passageway of said annular rings; movable valve means positioned in said open central passageway of said tubular body and positionable between a first position extending transversely of said passageway, and a second position in general alignment with the longitudinal axis of said passageway, said valve means including a butterfly rotatably supported within said open central passageway of said tubular member upon a shaft extending outwardly of said body, and positioning means being provided to position said butterfly in said first and second positions, and wherein said positioning means includes a knob rotatable upon said shaft and axially movable thereon; a compression spring interposed between said knob and said shaft urging said knob toward said body; a disc fixed to said body and defining at least one position defining aperture; a disc fixed for rotation with said shaft and defining at least one pin receiving aperture, said knob including at least one pin extending through said pin receiving aperture to engage said disc fixed for rotation with said shaft to rotate with said knob, said pin being of a length sufficient to engage said position defining aperture, and adapted to disengage said position defining aperture upon axial movement of said knob against the force of said compression spring.

4,541,507

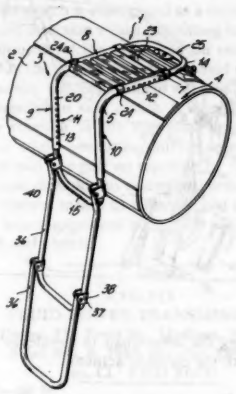
UNIVERSAL FOLDING LADDER FOR BOATS

Silvano Gibellato, Via Caltana, 28, Campodarsego (Province of Padova), Italy

Filed Oct. 9, 1984, Ser. No. 659,208
Claims priority, application Italy, Oct. 14, 1983, 30818/83[U]
Int. Cl.⁴ E06C *5/26, 1/52*
U.S. Cl. 182—86 **8 Claims**

1. A universal folding ladder for boats, characterized in that it comprises a tubular structure intended for straddling the gunwale of a boat and including at least two L-like elements extending parallel to each other and being interconnected at the ends thereof by at least two adjustable U-like elements, said

structure being connected, on the one side, to the boat through a latch means for a catch element, and on the other side, to



swingingly connected rungs, between said L-like elements there being mounted a flat rest base member.

4,541,508

FOLDABLE OR RETRACTABLE LADDER FOR MOUNTING IN A CEILING

Jöran Lundh, Box 461, Karlstad, Sweden (S-651 07)

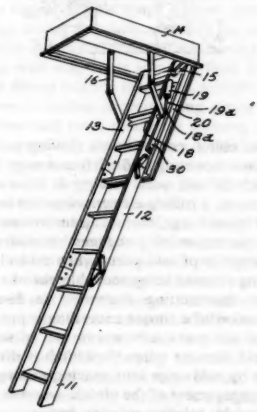
PCT No. PCT/SE82/00360, § 371 Date Jun. 22, 1983, § 102(e) Date Jun. 22, 1983, PCT Pub. No. WO83/01638, PCT Pub. Date May 11, 1983

PCT Filed Nov. 1, 1982, Ser. No. 518,310

Claims priority, application Sweden, Nov. 3, 1981, 8106488

Int. Cl.⁴ E04F *11/04*

U.S. Cl. 182—178 **3 Claims**



1. A foldable or retractable ladder, especially for use at a door for an opening in the ceiling, for example, to an upper storey such as an attic in a building or the like, which ladder comprises a plurality of sections (11,12,13) arranged one after the other in the operative position of the ladder, which upper section (13) of the ladder is pivotally attached to a frame (14) for the door opening, and the downward pivotal movement of the ladder (11,12,13) is limited by toggle joint means (16,17) attached on the upper section (13) of the ladder as well as on the frame (14), characterized in that the toggle joint means comprise two toggle joints (16,17) attached to each side of the frame and, respectively, to each side rail of the ladder, which toggle joints are connected to each other at the ladder by means of an axle (18) extending in parallel with the rungs of the ladder, said toggle joints having lower arms rigidly interconnected by means of the axle, said ladder being spring-loaded in the direction to its closed position by means of a gas spring (19), one end of which is attached to the ladder (13) or door (20), and the other end of which is attached to a moment arm (18*a*), which is rigidly connected to the axle (18) connecting the lower arms of the toggle joints (16,17).

4,541,509

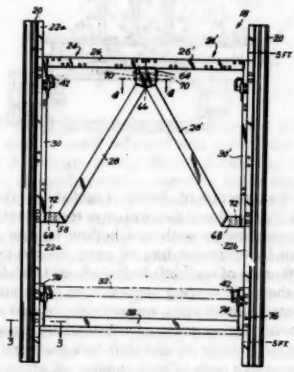
SHORING FRAME

Michael S. D'Alessio, Flushing, N.Y., and Richard C. Mocny, Kinnelon, N.J., assignors to Harsco Corporation, Camp Hill, Pa.

Continuation of Ser. No. 339,726, Jan. 15, 1982, abandoned. This application Aug. 20, 1982, Ser. No. 409,729

Int. Cl.⁴ E04G *1/14*

U.S. Cl. 182—179 **31 Claims**



1. A shoring frame brace, comprising said brace being constructed substantially from aluminum rectangular tubing in the form of a right non-isosceles triangle with the acute angled apices formed with short blunted portions at right angles to the respective adjacent leg, each such portion having a pair of lateral bolt holes extending therethrough in a direction parallel to its adjacent leg, and additional pairs of bolt holes perpendicular to the plane of the triangular surface of said brace and through each of said legs at both the outer and the inner portion of each end thereof, all of said pairs of bolt holes being aligned along the length of said legs or of said portions, said outer pairs of holes being adapted for use in bolting said brace to flanges on a shoring frame leg, and said inner pairs of holes being adpated for use in bolting to a bracing stud mount.

4,541,510

SHIFT FORK LUBRICATING SYSTEM FOR TRANSMISSION

Kazuhito Itoh, Tokyo, and Makoto Kondo, Saitama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP82/00423, § 371 Date Jun. 29, 1983, § 102(e) Date Jun. 29, 1983, PCT Pub. No. WO83/01667, PCT Pub. Date May 11, 1983

PCT Filed Oct. 29, 1982, Ser. No. 513,973

Claims priority, application Japan, Oct. 29, 1981, 56-173203

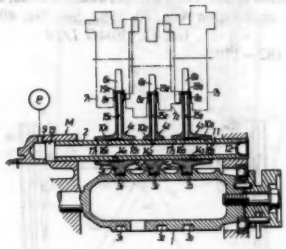
Int. Cl.⁴ F16H *57/04*; G05G *3/00*

U.S. Cl. 184—6.12 **3 Claims**

1. In a transmission of the type including a plurality of shift-

able gears each having a circumferential groove, a shift fork shaft having a hollow interior, a plurality of shift forks, each said shift fork having a leading end with a forked pawl portion engaged in one said circumferential groove of one of said shiftable gears and a bearing portion fitted on said shift fork shaft for supporting the respective shift forks, at least one said shift fork being slidable axially along said shift fork shaft, and sliding control means for moving said at least one shift fork along said shift fork shaft for shifting one of said shiftable gears, said shift fork shaft having an outer circumference, each said bearing portion having an inner circumference and a center area of said inner circumference, each of said forked pawl portion having an end face and side surfaces,

a shift fork lubricating system which is characterized in that said bearing portions of said at least one slidable shift forks have their said inner circumferences formed at their said center areas with annular oil grooves which are axially



elongated in the direction of sliding of said shift forks along said shift fork shaft and which are always respectively maintained in communication with said hollow interior of said shift fork shaft by corresponding oil ports opened into said outer circumference of said shift fork shaft, said slidable shift forks having their said bearing portion inner circumferences each also formed at both ends, respectively, of said annular oil grooves with sliding faces of substantially equal axial length which are slidable on said shift fork shaft and which define the respective ends of said annular oil grooves, said shift forks each being formed with oil passages therein having one end opening into said forked pawl portions thereof at locations eccentric to end face thereof rotationally entered by said shiftable gears, said oil passages being in communication at their other ends with said annular oil grooves in said bearing portions, said annular oil grooves enclosing said oil ports in said shift fork shaft.

4,541,511

WHEELCHAIR ELEVATOR AND DOCKING SYSTEM

George H. Muller, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 15, 1984, Ser. No. 589,625

Int. Cl.[4] B66B *9/20*

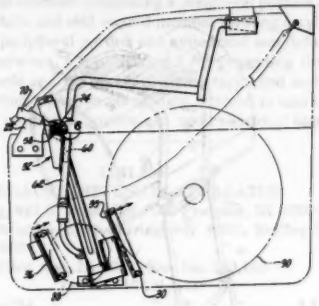
U.S. Cl. 187—9 R **8 Claims**

1. A system for lifting a wheelchair from a position on the ground adjacent an automobile and retaining the wheelchair in place within the automobile, the automobile including a front door hinged for movement about its front face and the wheelchair being of the type having a foldable frame, a pair of large directionally fixed rear wheels and a pair of smaller front dirigible wheels, the system comprising an elevator mechanism carried on the inside of the door and positioned adjacent the door forward edge and having a linear actuator selectively movable along a generally vertical axis canted forwardly with respect to the door front face;

a docking member carried with the actuator and having a rearwardly facing frusto-conical aperture formed therein;

a means carried with a portion of the wheelchair frame and engageable with the docking member aperture; and

locking means carried on the docking member for selectively locking the engageable means in the docking mem-



ber for carrying the wheelchair in cantilever fashion for movement with the elevator actuator.

4,541,512

TORQUE LIMITING CLUTCH

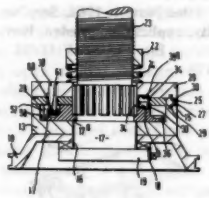
Andrew J. Beasant, Cheltenham; Olaf J. B. Orwin, Birmingham, and David J. Fortune, Bath, all of United Kingdom, assignors to GIB Precision Limited, Gloucestershire, United Kingdom

Filed Jul. 20, 1981, Ser. No. 285,363

Claims priority, application United Kingdom, Jul. 24, 1980, 8024269

Int. Cl.[4] F16D *43/20*

U.S. Cl. 192—56 R **14 Claims**



1. An overload clutch comprising a driving part, a driven part, a cage, means mounting said parts and cage for relative rotation and each of said parts having at least one torque transmtting abutment, a rolling element disposed between said parts and guided by said cage, biasing means to bias axially said element into torque transmitting engagement with said torque transmitting abutments of said parts when said clutch is engaged, said rolling element being movable out of engagement with said torque transmitting abutments to disengage the clutch on application of a torque exceeding a predetermined torque to one of said parts, a recess in one of said parts to accommodate said element when the clutch is disengaged, a spacer, movable by said cage into spacing relationship with said parts on disengagement of the clutch, wherein said clutch can be disengaged by relative rotation between said part in either direction and said clutch can be re-engaged by relative rotation between said parts in the opposite direction to that which caused disengagement, said clutch including two pairs of interengageable abutments, one abutment of each pair being provided on the cage and the other on the other of said parts and operable to cause said cage and said other of said parts to rotate together, one pair of abutments being operable on relative rotation between the clutch parts in the opposite direction to that in which the other pair is operable, biasing means normally to bias one abutment of each pair in a direction towards

engagement with the other abutment of the pair, first control means being provided on said one clutch part;

(a) to prevent interengagement of said abutments of one pair when said clutch is disengaged as a result of relative rotation in one direction whilst permitting interengagement of said abutments of the other pair on resetting by relative rotation in the reverse direction to said one direction; and

(b) to prevent interengagement of said abutments of the other pair when said clutch is disengaged as result of relative rotation in the opposite direction to said one direction whilst permitting interengagement of the abutments of said one pair on resetting by relative rotation in the reverse direction to said other direction

and second control means to maintain said abutments of both pairs out of interengagement during the initial stages of disengagement of said clutch.

4,541,513

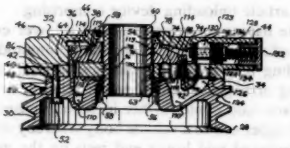
FLUID POWER TRANSMISSION

William H. Payne, 111 Pratt St., Madison, N.C. 27025

Filed Sep. 6, 1983, Ser. No. 529,843

Int. Cl.[4] F16D *31/00*

U.S. Cl. 192—58 R **29 Claims**



1. A fluid power transmission adapted for receiving a variable speed rotary input force and transmitting a relatively substantially constant speed rotary output force, said transmission comprising:

(a) rotor means adapted to be rotatably driven by said input force in direct variable speed relation therewith,

(b) housing means annularly mounted on said rotor means for relative rotation thereabout and having means sealably defining with said rotor means a fluid drive circuit for being in driven relation therewith, said drive circuit defining means including eccentric ring means disposed annularly about said rotor means for defining a fluid working chamber annularly therebetween, a fluid reservoir in said housing means, and fluid passageway means in said housing means for fluid flow respectively between said reservoir and said working chamber,

(c) a predetermined quantity of non-compressible hydraulic fluid contained in said drive circuit, and

(d) valve means disposed in said passageway means and having a valve operating member movable generally radially of said housing means, said valve operating member being biased into a normal radially-inward valve closing position to prevent fluid flow in said passageway means for essentially locking said rotor means and said housing means in direct driving relation, and being yieldable radially-outwardly variably in a predetermined direct responsive relation to centrifugal forces generated by rotation of said housing means in excess of a predetermined optimum rotational speed thereof for permitting positive displacement rotor means-impelled fluid flow through said passageway means at varying flow rates directly related to said excess rotational speed of said housing means for causing variable slippage between said rotor means and said housing means in direct relation to said excess rotational speed of said housing means, thereby substantially limiting increases in the rotational speed of said housing means over said optimum speed thereof.

4,541,514

FRICTION CLUTCH AND DIAPHRAGM SPRING THEREFOR

Wolfgang Reik, Bühl, Fed. Rep. of Germany, assignor to Luk Lamellen und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany

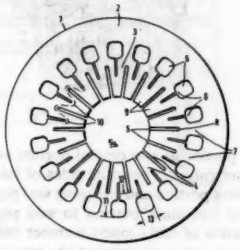
Filed Jul. 15, 1982, Ser. No. 398,637

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1982, 3204557

The portion of the term of this patent subsequent to Apr. 30, 2002, has been disclaimed.

Int. Cl.[4] F16D *13/44*; F16F *1/34*

U.S. Cl. 192—70.27 **19 Claims**



1. A friction clutch, comprising a cover; a pressure plate; a pair of annular seats between said cover and said pressure plate; a diaphragm spring disposed between said seats and having a circumferentially complete outer marginal portion located radially outwardly of said seats and engaging with said pressure plate, said spring further comprising a second portion having a plurality of holes adjacent said marginal portion, said second portion including webs alternating with said holes and said second portion further including a circumferentially complete tension spring integral with and disposed radially inwardly of said webs, said second portion defining a substantially centrally located opening and further comprising an annulus of prongs surrounding the opening and integral with said tension spring, said second portion also having a plurality of open slots having radially outermost portions and alternating with said prongs and said second portion further having closed slots having inner portions disposed radially outwardly of the outermost portions of said open slots; and fastener means extending through said holes and securing said spring to said cover.

4,541,515

APPARATUS FOR SUPPLYING HYDRAULIC FLUID TO AN HYDRAULIC CLUTCH

Sadanori Nishimura, and Katsuharu Kinoshita, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 29, 1982, Ser. No. 445,161

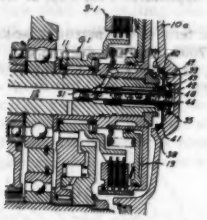
Claims priority, application Japan, Dec. 11, 1981, 56-183519[U]

Int. Cl.[4] F16D *25/063, 25/10*

U.S. Cl. 192—85 AA **2 Claims**

1. Apparatus for supplying hydraulic fluid to an hydraulically operated clutch, the clutch being mounted on a rotary shaft within a stationary case, the rotary shaft having a longitudinal bore communicating with a pressure chamber of the hydraulic clutch, comprising in combination: a stationary oil feeding pipe inserted coaxially into an open end of said bore and having a projecting portion supported by a bushing in said bore, a supporting member fitted on said pipe at a location remote from said bushing, said supporting member comprising a thin annular plate having inner and outer portions in substantially the same plane and a central portion axially offset therefrom, means for sealing and fixing said outer portion to said

case including a first seal ring engaging the case and positioned on the same axial side of said outer portion as said central portion and a first thin retainer ring on the other axial side of said outer portion engaging the case and clamping said outer portion and sealing ring to the case, and means for sealing and fixing said inner portion to said pipe including a second seal ring engaging said pipe and positioned on the same axial side of



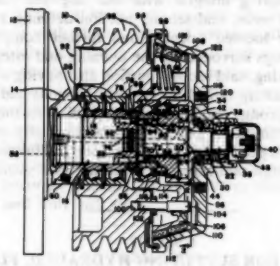
said inner portion as said central portion and second and third thin retainer rings on opposite sides of said combined second seal and inner portion and engaging said pipe for clamping said second seal and inner portion to said pipe, said axial offset central portion of said support member radially confining said first seal ring outwardly against the case and said second seal ring inwardly against said pipe.

4,541,516

CLUTCH DRIVE WITH ANTIROTATION SPRING

David T. Fenzel, Grafton, Ohio, assignor to Allied Corporation, Morristown, N.J.

Filed Mar. 9, 1983, Ser. No. 473,427
Int. Cl.⁴ F16D *13/30, 25/08*
U.S. Cl. 192—85 CA **9 Claims**



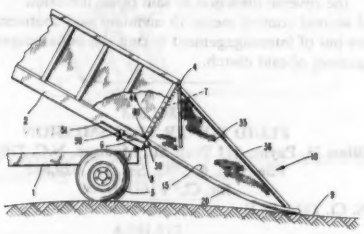
1. Clutch drive comprising a spindle having an axis, a driving member and a driven member mounted for rotation about the axis of said spindle, a fluid pressure responsive piston slidable on said spindle in response to fluid pressure supplied to the piston for effecting engagement and disengagement of the driving and driven members to effect a driving connection between the driving and driven members when said members are engaged and to break said driving connection when the members are disengaged, one of said members including a portion movable parallel to the axis of said spindle in response to movement of said piston, resilient means yieldably urging said parallel movable portion into driving engagement with said other member, and bearing means movable axially along said spindle with said parallel movable member and having rotative and non-rotative components for providing a connection between the piston and said parallel movable portion, characterized in that said non-rotative component of said bearing means and said spindle are interconnected by spring means which yields to accommodate axial movement of the bearing means along said spindle and resists rotation of the non-rotative component of the bearing means to prevent rotation of the non-rotative portion of the bearing means.

4,541,517

SELECTIVELY EXTENSIBLE CHUTE ASSEMBLY

Hugh T. O'Reilly, 1929 Powhatan St., Falls Church, Va. 22043

Filed Mar. 3, 1983, Ser. No. 472,874
Int. Cl.⁴ B65G *11/14*
U.S. Cl. 193—4 **13 Claims**



1. An article unloading device comprising:

a chute having an upper end and a lower end, said chute including a plurality of inflatable longitudinal tubes extending between said upper and lower ends, said tubes being arranged in side by side relation to form a chute surface, said chute further including means for attaching said upper end to a vehicle body whereby when said chute is deployed said lower end rests on the ground and the contents of the body may be conveniently unloaded by gravity;

retracting means for continuously urging said tubes to retract toward one of said chute ends;

actuator means for selectively supplying fluid from a source of fluid under pressure to inflate said tubes and thereby deploying said chute and for selectively venting said tubes so as to urge the tubes toward said one end for storage of the chute assembly; and

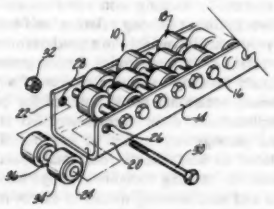
an inflatable positioning tube adjacent said chute upper end, said positioning tube extending transversely of said longitudinal tubes, said positioning tube aligning the chute assembly at a proper height with respect to a vehicle body.

4,541,518

MATERIAL FLOW RAIL

Francis V. Palazzolo, and Wayne T. Polachowski, both of Sterling Heights, Mich., assignors to Custom Automation, Inc., Mt. Clemens, Mich.

Filed Feb. 1, 1984, Ser. No. 575,769
Int. Cl.⁴ B65G *13/00*
U.S. Cl. 193—35 A **10 Claims**



1. A material flow rail for transmitting articles by gravity comprising:

a support channel forming upstanding leg sections extending along a longitudinal axis, said leg sections forming a plurality of bores,

a plurality of bolt assemblies extending between said upstanding leg sections and passing through said leg section bores, said bolt assemblies oriented transversely with respect to said longitudinal axis, and

support means including bearing assemblies loosely supported on said bolt assemblies said support means having an inner race, a pair of axially presenting and parallel annular surface, an outer race and rolling bearing elements interposed therebetween, said bolt assemblies spaced in the direction of said support channel longitudinal axis a distance less than the outer diameter of said outer races such that said support means are overlapping in said longitudinal direction

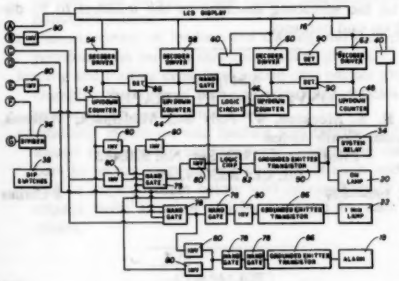
wherein at least one of said annular surfaces of a first support means contacts a second support means adjacent said first support means wherein said contact between said annular surface and said second support means determines the relative transverse position of said support means; wherein said first support means is captured only between one of said upstanding leg sections and said second support means.

4,541,519

COIN-OPERATED, ELAPSED TIME APPARATUS

Vincent Belviso, Babylon, and William H. Wicks, Huntington, both of N.Y., assignors to Cyclonic Equipment Co., Inc., Deer Park, N.Y.

Filed Jan. 5, 1984, Ser. No. 568,427
Int. Cl.[4] G07F *5/16*
U.S. Cl. 194—1 N **2 Claims**



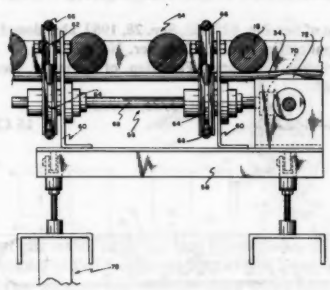
1. A coin-operated, elapsed time apparatus comprising means for receiving coins at any time during its operating sequence, means for producing signals in response to said coins, means for providing counting down pulses to counters, switching means for providing predetermined quantities of counting up pulses to said in response to said signals, said counting up pulses being at pulse rates higher than the pulse rate of said counting down pulses, means for displaying the total of said counting up and counting down pulses, logic circuit means for employing said counting up and counting down pulses to energize a system and means for energizing ancillary apparatus further comprising warning lights and alarms during predetermined periods of time.

4,541,520

RIGHT ANGLE TRANSFER CONVEYOR SYSTEM AND A METHOD FOR TRANSFERRING ARTICLES AT A RIGHT ANGLE

Fred S. Greenlee, III, Wichita, Kans., assignor to Great Plains Ventures, Wichita, Kans.

Filed Sep. 26, 1983, Ser. No. 535,633
Int. Cl.[4] B65G *47/46*
U.S. Cl. 198—372 **9 Claims**



1. In an improved combination of a right angle transferring conveyor system for transferring articles at a right angle from a conveyor system of the type having a plurality of carrier rollers rotatably connected to a pair of support members and a conveyor cable drive means mechanically communicating with the conveyor system including a plurality of idle sheaves rotatably connected underneath the corner rollers to a plurality of pressure angle means that are in slidable contact with a plurality of support angles means having an adjustable means between each of the pressure angles means and the support angles means for vertically urging the pressure angle means away from the support angle means, and additionally having a nylon means covered endless cable positioned over the plurality of idle sheaves and engaged to the conveyor cable drive means and including at least two ends that are connected by a connection means, said improvement having the right angle transferring conveyor system comprising: a right angle transfer assembly means including a base means; a pair of support plate means connected to the base means: a plurality of roller means rotatably attached in proximity to the top of each of the support plate means; drive sheave means rotatably secured to each of the support plate means at a situs on the same below said roller means; a pair of endless belt means, one being trained over and carried by one set of roller means and drive sheave means and the other endless belt means being trained over and carried by the second set of roller means and drive sheave means; a drive shaft means interconnected to the two drive sheave means to provide common rotary power for the two drive sheave means when the drive shaft means receives rotary power: a first beveled gear means integrally bound to said drive shaft means to aid in transmitting rotary power to the drive shaft means: a right angle power sheave means; a power sheave shaft means having one end bound to the power sheave means and the other end bound with a secured beveled gear means that meshes with the first beveled gear means of the drive shaft means; and means for elevating the right angle transfer assembly means such that initially the top of the roller means carrying the pair of endless belt means rises above the corner rollers of the conveyor system to pick up any articles being carried by the same while simultaneously stopping all linear motion of the picked-up articles and subsequently with continuing elevation the power sheave means pinches the moving nylon means covered endless cable between itself and contiguous carrier rollers in order to extract frictionally power from the moving nylon means covered cable to rotatively drive the power sheave means which in turn indirectly transmits rotary power to the two drive sheave means which fric-

tionally engages the two endless belt means to cause the same to traverse over the respective raised roller means in order to move any articles supported by the elevated endless belt means away from the conveyor system at a right angle.

4,541,521

APPARATUS FOR SINGULARIZING TRAYS FOR CIGARETTES OR THE LIKE

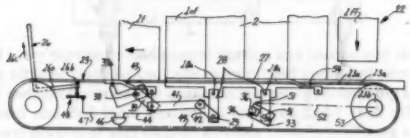
Günter Menge, Hamburg, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. K.G., Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 425,461, Sep. 28, 1982, abandoned. This application Dec. 5, 1984, Ser. No. 678,370

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1981, 3149985

Int. Cl.⁴ A24C *5/35, 5/352*

U.S. Cl. 198—463.5 **16 Claims**



1. Apparatus for singularizing trays which form a row of trays for stacks of cigarettes or the like, comprising conveyor means arranged to support the row of trays and to advance successive foremost trays of the row along a predetermined path and in a predetermined direction away from the remaining trays of the row; means for blocking the movement of the next-to-the-foremost tray of the row with the foremost tray; means for moving said blocking means substantially transversely of said path between an operative position in which said blocking means prevents advancement of the next-to-the-foremost tray in said direction by lifting the trays thereon to a level above said path and out of contact with said conveyor means and an inoperative position in which said blocking means is disengaged from the trays in said path so that the conveyor means is free to advance the trays of said row in said direction; means for receiving successive trays from said conveyor means, said receiving means being movable to and from a tray-accepting position; means for monitoring said receiving means and for generating first signals in the accepting position of said receiving means; first detector means adjacent to said path ahead of said blocking means, as considered in said direction, and arranged to generate second signals in response to detection of advancement of the foremost tray away from the remainder of the row in said path; means for activating said moving means in response to said first and second signals so as to move said blocking means from the operative to the inoperative position; drive means activatable to set said conveyor means in motion; second detector means for monitoring the position of said blocking means and for generating third signals when said blocking means assumes said operative position; an arresting device movable by said moving means between a first position in which said arresting device extends into said path in front of the foremost tray of the row of trays in said path and said blocking means assumes said inoperative position and a second position in which said arresting device is outside of said path and permits the foremost tray to advance along said path under the action of said conveyor means while said blocking means assumes said operative position; and means for activating said drive means in response to said third signals for intervals of time which are required to advance the foremost tray of the row into engagement with said receiving device, and when the foremost article is conveyed past said arresting device said first detector means causes said moving means to move said arresting device to the first position and said blocking means to the inoperative position so that the row of articles is advanced by said conveyor means into engagement with said arresting device before said drive means for said conveyor is stopped.

4,541,522

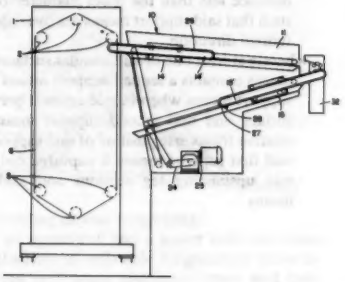
APPARATUS FOR LOADING AND REPLACING PIECE GOODS, CAPABLE OF BEING COUPLED TO SPREADING MACHINES

Franco Giachetti, Via Gardale, 25036 Palazzolo sull'Oglio (Brescia), Italy

Filed Jun. 10, 1982, Ser. No. 386,939

Int. Cl.⁴ B65G *37/00, 17/32*

U.S. Cl. 198—465.1 **5 Claims**



1. An apparatus for loading and replacing piece goods, capable of being associated with spreading machines, which comprises mandrels for carrying the piece goods, a vertically extending rotating carousel provided with balance supporting members for supporting said mandrels, a loading device located on one side of said carousel, said carousel including two shoulders, said shoulders bearing two motorized carriage pairs driven with synchronized reciprocating movements along respective converging paths, said carriages bearing an arm member, a chain slidable on the periphery thereof, said chain being provided with two adjoining projecting small plates for receiving therebetween either the mandrel of the pieces to be loaded on the spreading machine or the mandrel to be discharged on said carousel.

4,541,523

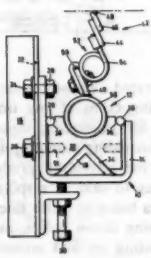
CONVEYOR BELT SCRAPER

Neville R. T. Stockton, 47 Judy St., Modelpark, Witbank, Transvaal, South Africa

Filed Aug. 4, 1983, Ser. No. 520,413

Int. Cl.⁴ B65G *45/00*

U.S. Cl. 198—499 **8 Claims**



1. A conveyor scraper assembly including a track arrangement which is adapted for location beneath a conveyor belt, a carriage which is adapted for engagement with and sliding

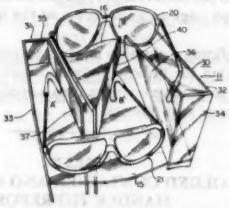
movement on the track arrangement, means for locking the carriage to the track arrangement, a plurality of aligned scraper blade assemblies and at least one coil spring arrangement connecting the blade assemblies to the carriage so that the blades on the assemblies are biased onto the underside of the belt against the direction of belt travel in use, each coil spring arrangement including a continuous element which is formed into at least two spaced and axially aligned coils with the portion of the element between the coils being bent into one or more loops by means of which the arrangement may releasably be fastened to the carriage with the free ends of the element extending in a common plane from the coils and being secured to the scraper blade assemblies.

4,541,524

CASE PACKER

Robert W. McGill, Monroe Falls, and Michael E. Winiasz, Lorain, both of Ohio, assignors to Figgie International, Richmond, Va.

Filed Mar. 11, 1983, Ser. No. 474,465
Int. Cl.[4] B65G *47/86*
U.S. Cl. 198—470.1 **12 Claims**



1. A case packer apparatus including an endless driven conveyor means, article gripper means, and carrier bars for said article gripper means,

said conveyor means having a downwardly extending reach connecting a pickup station to an article deposit station,

said article gripper means depending from said carrier bars as said conveyor means moves said carrier bars from a pickup station to an article deposit station, and

said carrier bars and gripper means being operatively connected to said conveyor means with carriage means and forming case packer groups spaced longitudinally of said conveyor means,

the improvement of leading and trailing end carrier means positioned on each of said case packer groups,

leading and trailing cross bars in said case packer groups for engaging the rows of leading and trailing articles carried by each case packer group, and

positioning means on said leading and trailing end carrier means respectively engaging and positioning said cross bars to secure them to end portions of each said group, and to suspend them below said carrier bars to directly engage neck areas of articles engaged by said gripper means.

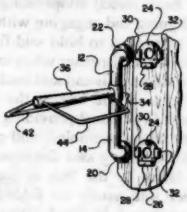
4,541,525

CONVEYOR TROUGH, PARTICULARLY FOR SCRAPER CHAIN CONVEYORS

Ernst Braun, and Gert Braun, both of Essen-Heisingen, Fed. Rep. of Germany, assignors to Halbach & Braun, Fed. Rep. of Germany

Filed Nov. 30, 1982, Ser. No. 445,432
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1981, 3150459
Int. Cl.[4] B65G *19/28*
U.S. Cl. 198—735 **4 Claims**

1. A conveyor trough particularly for scraper chain conveyors, comprising a plurality of transversely extending interconnected plates with adjacent plates having engaging edges and with alternately arranged projecting tongues and recesses which, together define a hinged connection between longitudinally adjacent plates, each of said plates having one engaging edge with an underlying coupling tongue disposed at a low level at each side of an overlying coupling tongue disposed at a level over said underlying tongue, and an opposite edge with an overlying coupling tongue on each side of an underlying coupling tongue, said overlying tongues engaging over corresponding ones of said underlying tongues, said tongues being sized to leave a clearance therebetween both vertically and horizontally to permit some vertical and some horizontal angling between said plates, each of said plates being substantially flat and having top and bottom faces, each plate having



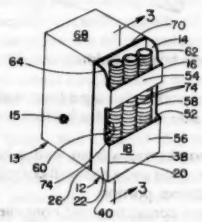
at least one recess on its top face forming one of said underlying tongues and a recess on its bottom face forming one of said overlying tongues said recesses being offset from each other across the engaging edges of each plate, each overlying tongue having an underlying tapered face extending from an inner end face which is perpendicular to said bottom face, upwardly to an outer end face which is perpendicular to said top face and each underlying face having an upper tapered face which extends from an inner end face extending perpendicularly to said top face downwardly to an outer end face which is perpendicular to said bottom face.

4,541,526

FOLDED CARTON BEVERAGE ACCESSORIES DISPENSER

Lloyd T. Berg, 41 Westmere Dr., Des Plaines, Ill. 60016, and Stephen A. Flowers, 8508 W. Lisa La., Hickory Hills, Ill. 60457

Filed May 10, 1984, Ser. No. 608,667
Int. Cl.[4] B65D *85/62*
U.S. Cl. 206—44.12 **9 Claims**



1. A folding carton blank for forming a disposable dispenser for at least one of a plurality of disposable stacks of cups and other beverage accessories, said dispenser being used with and adapted to be connected to one side of a bag in the box type beverage server, said folding carton blank comprising a first generally rectangular side panel having a vertical fold line, first locking means one side of said vertical fold line of said first side panel, a horizontal fold line on said first side panel, a first bottom forming tab on the bottom side of said horizontal fold line, a generally rectangular front panel connected to said first side panel at the side of said vertical fold line opposite said first locking means, said front panel having an access opening therein of a width substantially that of said front panel, of a height at least one-half the height of said front panel and

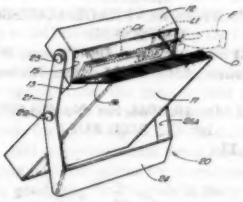
greater than that of one of the cups so that a cup may be removed therethrough, said front panel having a second horizontal fold line, a second bottom forming tab on the bottom side of said second horizontal fold line on said front panel, a generally rectangular second side panel connected to said front panel, a third horizontal fold line on said second side panel, a third bottom forming tab on the bottom side of said third horizontal fold line on said second side panel, a generally rectangular back panel connected to said second side panel, a fourth horizontal fold line on said back panel, a fourth bottom forming tab on the bottom side of said fourth horizontal fold line on said back panel, cooperating locking means on said back panel aligning and engaging with said first locking means on said first side panel to hold said first side and back panels together to form the dispenser when said carton blank is assembled, said two side panels and said back panels being of a height substantially that of the bag in the box server, said access opening in said front panel providing access to the interior of said dispenser when assembled, and means on at least one of said panels for securing said dispenser when assembled from said carton blank to the bag in the box beverage server, whereby when said panels are folded and assembled, the assembled dispenser can be filled with at least one of a plurality of disposable stacks of beverage cups and other beverage accessories and secured to the bag in the box beverage server to provide neat and convenient service.

4,541,527

STORAGE BOX WITH SNAP OPENING LID AND STAND

Robert C. Nagel, 7131 Cambria Cir., Orange, Calif. 92669

Filed Oct. 10, 1984, Ser. No. 659,244
Int. Cl.⁴ B65D *85/57, 25/20*
U.S. Cl. 206—45.24 **10 Claims**



1. A storage box for holding and displaying diskettes or the like, comprising:

a container portion having a front wall, a back wall, first and second side walls and a bottom wall for holding the diskettes;

a lid portion having a front wall, a back wall, first and second side walls and a top wall corresponding to the walls of the container portion;

hinge means connecting said container and lid portions; and

combined latch and stand means pivotally interconnecting said container and lid portions; said latch and stand means cooperating with said hinge means to provide positive latching action in a closed position for storage and a stand supported open position for the display of diskettes for easy access.

4,541,528

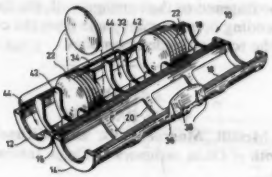
HINGED COIN HOLDER

Gordon W. Holmes, Mississauga, Canada, assignor to Professional Packaging Limited, Mississauga, Canada

Filed Apr. 16, 1984, Ser. No. 600,985
Claims priority, application Canada, Apr. 5, 1983, 425138
Int. Cl.⁴ B65D *85/62, 8/04, 25/54;* **A45C** *11/00*
U.S. Cl. 206—0.82 **13 Claims**

1. A holder for disc-like objects constructed of polymeric material and formed by molding as an integral element, comprising:

an elongate hollow cylindrical body having a generally circular cross-section of diameter substantially that of the disc-like objects to be packaged therein and formed of two semi-circularly cross-sectioned portions hingedly joined together at one common edge and releasably joined together at the other common edge to enable opening of said



body to occur at the other common edge and hinging of the two portions relative to each other to occur at the one common edge to gain access to the interior of the body, and

means defining a plurality of separate object-receiving pockets within the hollow body and each of which is dimensioned to receive no more than a predetermined maximum number of said objects.

4,541,529

BLOW MOLDED CONTAINER AND SUPPLEMENTAL HANDLE THEREFOR

Borge Hestehave, Alta Loma, and Kjeld Hestehave, Upland, both of Calif., assignors to Bomatic, Inc., Ontario, Calif.

Filed Jul. 19, 1983, Ser. No. 515,173
Int. Cl.⁴ B65D *21/02, 25/28*
U.S. Cl. 206—510 **17 Claims**

1. A stackable plastic container comprising: a blow molded container body of generally rectanguloid configuration having elongated top and bottom walls, a pair of major side walls and a pair of minor side walls;

wherein said top wall is provided with a threaded neck-like opening, in the vicinity of one of said pair of minor side walls and centrally positioned relative to said major side walls, a pair of upwardly projecting top wall portions of the blow molded container body that are symmetrically disposed relative to a center line extending across the container between said major side walls, a first of said top wall portions substantially spanning between said pair of major side walls at a position adjacent said neck-like opening, a second or said top wall portions substantially spanning between said pair of major side walls in the vicinity of the other of said minor side walls and at the same height as the first portion, and a single bar-type handle extending, as a unitary part of said container situated centrally between said pair of major side walls, from said first top wall portion to said second top wall portion, and a central portion extending across said top wall, between said projecting top wall portions, at a position below said handle so as to form a hand opening;

wherein said bottom wall is substantially planar except for

the provision of a plurality of downwardly projecting, unitary supporting and stacking nubs, said nubs being situated at positions corresponding to said projecting top wall portion; and

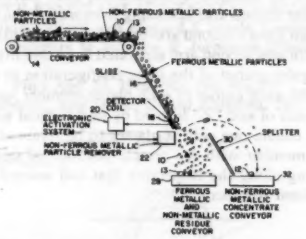
wherein said to wall portions have nub receiving stacking recesses positioned on opposite sides of said handle for enabling stacking of a like container on said container by engagement of the supporting and stacking nubs of the like container in said stacking recesses;

further comprising a rigid supplemental handle means sized and shaped for insertion through said hand opening and for detechable engagement with said single, bar-type handle of the container top wall, said supplemental handle means having a pair of bar-type handle portions laterally spaced from each other and connected by crosspieces, notch means in the crosspieces for receiving said bar-type handle of the container top wall, and securing means for retaining the bar-type handle of the container within the notch means, whereby the container is convertible from a single handle container to a triple handle container.

4,541,530
RECOVERY OF METALLIC CONCENTRATE FROM SOLID WASTE

Garry R. Kenny, College Grove; Edward J. Sommer, Jr., and Mark E. Shepard, both of Nashville, all of Tenn., assignors to Magnetic Separation Systems, Inc., Nashville, Tenn.

Filed Jul. 12, 1982, Ser. No. 397,559
Int. Cl.[4] B07C *5/344*
U.S. Cl. 209—571 **1 Claim**



1. A non-ferrous metal concentrator comprising

(1) means for feeding solid waste in the form of non-metallic particles and ferrous and non-ferrous metallic particles to a concentration zone,

(2) in continuity with said means for feeding a slide for receiving said solid waste into and conducting said solid waste through said concentration zone,

(3) in conjunction with said slide a phase-lock loop detection circuit comprising a plurality of detector coils,

(4) an electronic activation system in association with said slide,

(5) a pneumatic particle remover positioned so as to be activated by said electronic activation system, said pneumatic particle remover including

(a) an air line from an air source, and

(b) an air valve and a jet-type spray unit connected to said air line,

(6) a non-metallic residue conveyor positioned to receive non-metallic particles from said slide,

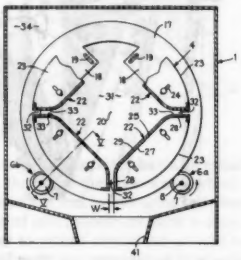
(7) a metallic concentrate conveyor positioned to receive principally non-ferrous metallic particles caught by said jet-type spray unit, and

(8) a splitter separating said non-metallic residue conveyor and said metallic concentrate conveyor, said phase-lock loop detection circuit and electronic activation system comprising a detector coil drive circuit, detector coil and output frequency filter, amplifier and time-delay circuit whereby a feedback loop is formed to enable the coil to be driven at the natural electrical resonant frequency of detector coil inductance and parallel tank circuit capacitance and whereby said phase-lock loop detection circuit produces an error signal which, after being amplified and high pass filtered, is used to activate said air valve.

4,541,531
ROTARY SEPARATOR

Paul L. Brulé, Plainwell, Mich., assignor to LaRos Equipment Company, Portage, Mich.

Filed Aug. 4, 1983, Ser. No. 520,102
Int. Cl.[4] B07B *13/04*
U.S. Cl. 209—664 **7 Claims**



2. A rotary separator in the form of a rotatable drum adapted upon rotation thereof to separate two types of intermixed objects of different sizes disposed within the drum by expelling therefrom objects of one of the types separately from objects of the other of said types, comprising:

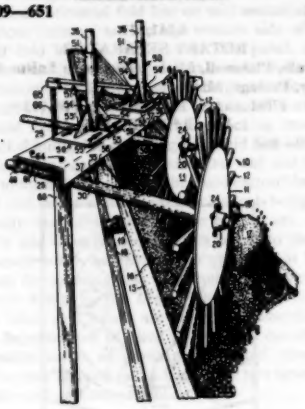
a rotatable drum including frame means and a small number of elongated and axially extending channel-like members mounted on said frame means in a circular array about and radially spaced from the rotational axis of said drum so as to define therebetween a substantially polygonal boundary wall which defines therein an enlarged central chamber, said polygonal boundary wall being defined by a number of planar sidewalls equal to the number of channel members;

each said channel-like member having a single substantially flat and planar bottom wall which in its widthwise dimension extends generally circumferentially of the drum and defines one of the sidewalls of the polygonal boundary wall, each said channel-like member also having a pair of edge walls which extend longitudinally of the channel-like member along the opposite lengthwise edges of the bottom wall and project therefrom generally radially outwardly of said drum, said channel-like members being circumferentially spaced apart such that the opposed edge walls of each adjacent pair of said channel-like members extend radially outwardly and form therebetween an axially elongated slot which opens radially outwardly from said central chamber, said opposed edge walls being substantially parallel as they project radially outwardly so that said slot is radially elongated, the radial length of said slot being equal to or greater than the width thereof, and said edge walls having a radial extent which is small relative to the widthwise extent of said bottom wall;

adjustable mounting means for attaching said channel-like members to said frame means for enabling said channel-like members to be selectively radially displaced to adjust the cross-section of said central chamber and hence vary the width of said slots for controlling the size of the object discharged therethrough; and

means for rotating said drum for tumbling the objects within said chamber, whereby one of said types are discharged through said slots while objects of the other of said types are not discharged through said slots.

4,541,532
SIDE KICK SOLIDS SEPARATOR
William A. Wilson, 83 Pheasant Dr., Marietta, Ga. 30067
Filed May 25, 1983, Ser. No. 497,897
Int. Cl.[4] B07B *13/05*
U.S. Cl. 209—651 13 Claims

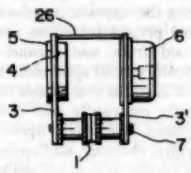


5. Apparatus for dislodging oversize objects from a moving conveyor which comprises:

(a) at least one wheel mounted for rotation about an axis of symmety thereof, with the axis of symmetry at an acute angle to the longitudinal centerline of the conveyor; and

(b) means connected to the wheel for applying a force in a direction generally laterally to the centerline of the conveyor to oversize objects which are contiguous said means, so that they tend to be deflected sideways, the wheel being driven by a portion of the translational energy imparted to the oversize objects by the conveyor.

4,541,533
CHAIN FOR A MACHINING CENTER
Takeshi Uemura, Osaka, Japan, assignor to Tsubakimoto Chain Co., Osaka, Japan
Filed Apr. 12, 1983, Ser. No. 484,226
Claims priority, application Japan, Apr. 15, 1982, 57-61826
Int. Cl.[4] A47F *7/00*
U.S. Cl. 211—1.5 12 Claims

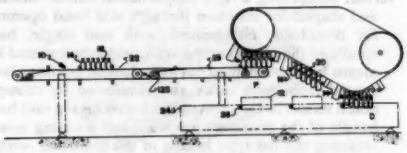


1. A machining center chain having oppositely faced link plates comprising:

a tool holding part having a tapered first hole therein for receiving a tool, the tool holding part being disposed in a first of a pair of said oppositely faced linked plates; and

a separate pull stud bolt holding part having a second hole therein for receiving and holding an end of said tool, said pull stud bolt holding part being disposed in a second of said pair of oppositely faced linked plates and opposite to said tool holding part.

4,541,534
DISPLAY RACK FOR SUNGLASSES OR SIMILAR ARTICLES
Helmut Strauss, Englewood, N.J., assignor to Hudson Universal Ltd., Englewood, N.J.
Filed Sep. 20, 1984, Ser. No. 652,652
Int. Cl.[4] A47F *7/02*
U.S. Cl. 211—13 8 Claims

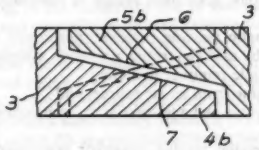


1. A display rack for sunglasses or similar articles, said rack of the type including a series of individual compartments oriented in the vertical plane in a stacked array, comprising;

a plurality of vertical wall members extending in the vertical plane with at least three central vertical wall members oriented to form a "Z" like cross sectional configuration,

first and second planar members secured to said vertical wall members at each compartment location and directed in a generally horizontal plane, with each planar member being of an identical configuration, each having a first triangular shaped arm extending from a common base and separated from a second arm extending from said common base with said second arm separated from said first arm by a triangular cutout of the same configuration as said first arm, with each cutout of each planar member inserted on to one side of said "Z" formed by said vertical wall members to enable one pair of glasses to be retained by each planar member with the temple portions of said glasses extending along the respective first and second arms of each planar member.

4,541,535
SADDLE RACK
Richard P. Bartholomew, 2321 S. Santa Fe Ave., Vista, Calif. 92083
Filed Mar. 3, 1983, Ser. No. 471,777
Int. Cl.[4] A47F *5/08*
U.S. Cl. 211—96 3 Claims



1. A saddle rack comprising:

wall mounting means composed of first and second tubular members joined together in a telescoping arrangement forming a joint, said first and second telescoping members having a common first longitudinal center axis;

a frame having a sleeve, said first tubular member to extend through said sleeve, said sleeve to abut against said second

tubular member at said joint, said sleeve being freely pivotable about said first tubular member;

said frame including a supporting rod, one end of said rod being attached to said sleeve and extending therefrom, said rod having a second longitudinal center axis, said supporting rod being mounted so said second longitudinal center axis is displaced from the perpendicular to said first longitudinal center axis, said displacement being so that the outer end of said frame is at a higher elevation than the connection of said supporting rod to said sleeve, whereby any jostling of a saddle supported by said supporting rod tends to maintain the saddle on said supporting rod;

a pair of side frame members attached to said supporting rod and extending therefrom substantially opposite to each other, each said side frame member forming a planar supporting surface, each said planar supporting surface being located at an acute angle to horizontal in a downwardly depending manner, whereby the undersurface of the skirt of a saddle is to be placed on said side frame members across said supporting rod to thereby be supportedly spaced from the floor; and

said wall mounting means including wall mounting brackets, said first and second tubular members being removably connected to said wall mounting brackets thereby facilitating transfer of said saddle rack from one location to another location to then be engaged with a separate pair of said wall mounting brackets.

4,541,536

TAMPER-RESISTANT CONTAINER ASSEMBLY

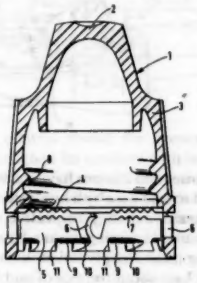
Eugene E. Davis, Ilford, and Richard J. Searle, London, both of England, assignors to Johnsen & Jorgensen (Plastics) Ltd., England

Filed Apr. 23, 1984, Ser. No. 603,192

Claims priority, application United Kingdom, Jul. 15, 1983, 8319263

Int. Cl.⁴ B65D *41/34*

U.S. Cl. 215—252 **5 Claims**



1. A tamper-resistant screw cap and container body assembly wherein the cap is connected to a safety band which can turn with the cap when the cap is being screwed on to the container body but which is held against turning when the cap is being screwed off, by the engagement of discontinuous ratchet-shaped inner beads on the cap with discontinuous ratchet-shaped outer beads on the container body; and wherein said container body comprises an annular bead, and the innermost portions of said outer beads on said container body are underneath and inside of the outermost portion of said annular bead, and the innermost portions of said inner beads on said cap, when it is engaged, are also underneath and inside of the outermost portion of said annular bead.

4,541,537

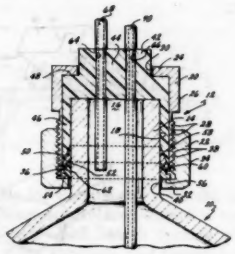
FLUID TIGHT SEAL FOR CONTAINER

Clifford L. Sailor, Altadena, Calif., assignor to City of Hope National Medical Center, Duarte, Calif.

Filed Nov. 21, 1983, Ser. No. 553,556

Int. Cl.⁴ F16L *17/00*; B65D *45/30*

U.S. Cl. 215—274 **20 Claims**



1. In combination with a container having a cylindrical neck with an opening in the top of the neck, a seal which comprises:

top seal means, said top seal means sized and shaped so as to fit over the top of said cylindrical neck to close said opening and further to extend down and around a portion of said cylindrical neck and terminating in a sealing edge;

intermediate seal means sized and shaped so as to fit around said cylindrical neck below said top seal means, said intermediate seal means having an upper sealing edge and a lower sealing edge, said upper sealing edge of said intermediate seal means mating with said sealing edge of said top seal means;

bottom seal means sized and shaped so as to fit around said cylindrical neck below said intermediate seal means, said bottom seal means having an upper sealing edge, said upper sealing edge of said bottom seal means mating with said lower sealing edge of said intermediate seal means;

bottom locking means fitting around said cylindrical neck and having at least a portion thereof spaced from said cylindrical neck so as to form a cavity between said bottom locking means and said cylindrical neck, at least said bottom and said intermediate seal means locatable in said cavity, said bottom locking means including engagement means for engaging said said bottom seal means and holding said bottom seal means with respect to said bottom locking member, said bottom locking means further including joining means;

top locking means sized and shaped so as to fit around said top seal means and having a portion thereof extending into said cavity, said top locking means including engagement means for engaging said top seal means and holding said top seal means with respect to said top locking means, said top locking means further including joining means for joining said top locking member to said bottom locking member.

4,541,538

WIRING DEVICE COVERS

Norman T. Swetnam, East Greenwich, R.I., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 16, 1984, Ser. No. 600,741

Int. Cl.⁴ H02G *3/14*; H05K *5/03*

U.S. Cl. 220—3.8 **2 Claims**

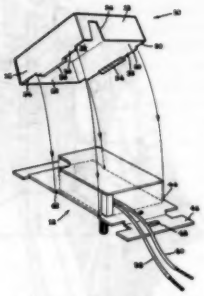
1. A snap-on cover for an electrical wiring device having a plate associated therewith comprising:

a substantially rectangular hollow member of a pliable material and comprising a substantially planar rectangular member and a rectangular wall member surrounding the perimeter of and extending substantially perpendicularly to said planar rectangular member; and

first and second plate engaging means attached respectively to opposed sides of said rectangular wall member and comprising:

first and second projections extending respectively from the edge of respective ones of said opposed sides of said wall and in the plane thereof; said first one of said projections comprising a first length and said second one of said projections comprising a second length different from said first length to a degree as to facilitate and ensure proper orientation of said cover to the plate having notches corresponding in lengths to said projections; and

first and second detents connected to respective ones of said first and second projections and extending substantially perpendicularly thereto.

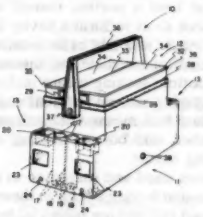


4,541,539

COMPOSITE FISHERMAN SUPPORT SYSTEM

Carroll H. Matthews, 5901 Castlebrook Dr., Raleigh, N.C. 27604

Filed Feb. 13, 1984, Ser. No. 579,449
Int. Cl.[4] A63D *55/00*
U.S. Cl. 220—20 **12 Claims**



1. A composite support system comprising: an insulated cooler means; at least one equipment holder means integrally formed with said cooler means; separate and detachable tackle box means mounted on said cooler means; and cutting board means mounted on said tackle box means whereby a composite support system for fishing and similar endeavors is provided.

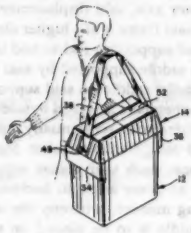
4,541,540

THERMALLY INSULATED CHEST

Charles Gretz, Suisun, Calif., and Gerald J. Kandel, Baltimore, Md., assignors to Life-Like Products, Inc., Baltimore, Md.

Filed Mar. 27, 1984, Ser. No. 593,923
Int. Cl.[4] A45C *11/00*
U.S. Cl. 220—20 **17 Claims**

1. A thermally insulated chest comprising a body and a detachable lid for thermally sealing engagement therewith, said body having a pair of thermally insulated compartments separated by a partition wall asymmetrically disposed within said body with at least one of said compartments being constructed to receive and hold upright a beverage bottle of greater height than that compartment, said lid having a pair of recesses respectively adapted to mate with said compartment and separated by dividing wall means adapted to engage said partition wall irrespective of which of said recesses is mated with said compartment, whereby the major portion of said bottle is contained within said compartment and a top portion of said bottle is contained within the recess mated with said compartment.

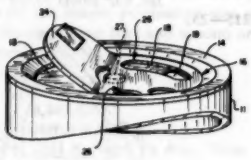


4,541,541

TAMPER-RESISTANT CLOSURE FOR DISPENSERS

John R. Hickman, Talmadge; Nicholas J. Kriska, Uniontown; Jeffrey H. Brechtelsbauer, Stow; Bruno A. Mediate, Maple Heights, all of Ohio, and Jordan I. Rotheiser, Highland Park, Ill., assignors to Weatherchem Corporation, Twinsburg, Ohio

Filed Oct. 9, 1984, Ser. No. 659,234
Int. Cl.[4] B65D *51/18*
U.S. Cl. 220—253 **18 Claims**



1. In a dispenser end closure having a base and a rotor pivotally connected to said base by a hub, said base and rotor having webs with means defining respective dispensing apertures therein, the rotor dispensing means being alignable with the base dispensing means by pivotal movement of said rotor with respect to said base about the axis of said hub, said hub slidably retaining said base and rotor in a close superposed relationship, the improvement comprising a frangible area on at least one of said base, rotor and hub elements, said frangible area being adapted to tear when an attempt is made to separate said base and rotor.

4,541,542

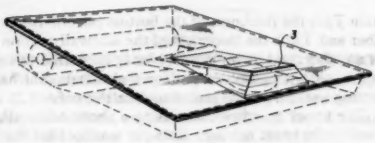
PAINT TRAY COVER

Gregory Florentino, 130 Third Ave., Brentwood, N.Y. 11717

Filed Mar. 12, 1984, Ser. No. 588,396
Int. Cl.[4] B65D *41/16, 41/18*
U.S. Cl. 220—306 **6 Claims**

1. A paint tray cover for a paint tray comprising: A generally rectangular surface extending over the four sides of the paint tray, said surface having a wedge shaped spatial protru-

sion preformed along a center line of said surface to accommodate the handle of a paint brush in said tray, and means for



securely attaching said paint tray cover airtight relation to said paint tray.

4,541,543

REGULATION AND CONTROL DEVICE FOR PRESSURE COOKERS

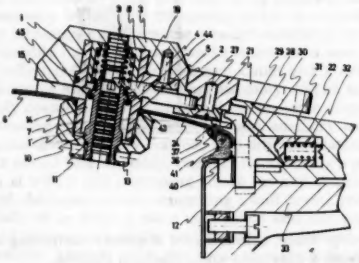
Manuel A. Elexpuru, Aramayona, Spain, assignor to Radar S. Coop, Escoriaza, Spain

Filed Nov. 28, 1984, Ser. No. 675,778

Claims priority, application Spain, Nov. 30, 1983, 276,052; Mar. 23, 1984, 278,402

Int. Cl.[4] B65D *45/00*

U.S. Cl. 220—316 **18 Claims**



1. A regulation and control device for pressure cookers which, being specially designed for cookers with bayonet type closures, to whose body and lid respective semi-handles are connected, projecting sideways, which are coupled on closing and separated on opening, the top handle including an adjustable valve unit and a safety element which strains the joint made between the body and the lid when it is opened, characterized in that the valve unit, comprising basically a bracket with two sectors with different diameters, forming a stepping through which its top half is coupled to the mouth of the hole in the lid, while its bottom threaded half holds a locknut. Said bracket has a radial fin in its top half through which, with the aid of a screw, it is fixed to the head of the top handle, whereas the locknut which actually forms part of the valve has an annular spherical seat in a narrow bottom part, for an axial sealing plunger which crosses the bracket, and which includes a seat with respect to the above, said plunger thus forming an annular chamber with regard to the bracket and immediately above its seat, said annular chamber being communicated by a steam outlet nozzle placed between the head of the handle and the lid, opposite the arm of the former, with the particularity that this plunger is projected against the nut by a spring arranged between a stepping in it and the partially restricted opening of a bushing mounted and sliding inside the bracket, to be exact, in its top or outer half.

4,541,544

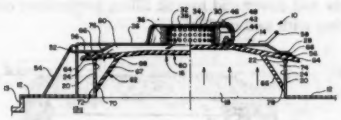
VENTING CLOSURE ASSEMBLY FOR A MILK TANK

Timothy J. Martin, Jr., Lynden, and Richard T. Henry, Bellingham, both of Wash., assignors to Light Industrial Company, Lynden, Wash.

Filed Oct. 1, 1984, Ser. No. 656,694

Int. Cl.[3] B65D *41/10*

U.S. Cl. 220—374 **23 Claims**



1. A closure assembly for a containing structure, such as a milk tank, which containing structure defines a containing chamber for a liquid, and which has an opening, such as a manhole, defined by a ring structure, said assembly comprising:

a. an outside cover member having an outer perimeter portion adapted to be positioned adjacent said ring structure, and also having a main inner portion extending across said perimeter portion, said inner portion having a first vent opening leading to ambient atmosphere;

b. an inside venting closure member adapted to be positioned in an operating location adjacent said cover, said closure member having an inner portion that is located below the first vent opening and a perimeter portion surrounding said inner portion;

c. said closure member being characterized in that it has a relaxed position where in its operating location and without external forces applied thereto, the inner portion is spaced downwardly from said first vent opening to permit air flow through said first vent opening, said closure member having an upwardly deflected position where, with an upper surge force exerted upon said closure member, the inner portion of the closure member is positioned against said first vent opening in closing relationship therewith;

d. said closure member being further characterized in that in its operating location the closure member provides a second vent opening means spaced from said first vent opening and leading to said containing chamber to permit air flow to and from said containing chamber to an area between said cover member and said closure member; whereby with the venting closure member in its operating location and in its relaxed position, said containing chamber can be vented to ambient atmosphere, and with a surge force exerted against said closure member, said closure member moves to its upwardly deflected closure position to block possible flow of liquid outwardly through said first vent opening.

4,541,545

PORTABLE FIRE RESISTANT CASE

Patrick J. Beattie, Henrietta, and David O. Chase, Skaneateles, both of N.Y., assignors to John D. Brush & Co., Inc., Rochester, N.Y.

Filed Jun. 27, 1984, Ser. No. 625,136

Int. Cl.[4] B29C *23/00*; B65D *25/14, 25/20, 55/14*

U.S. Cl. 220—431 **15 Claims**

1. A system of making a case fire resistant, said system comprising:

a. molded resin forms having double walls defining cavities respectively shaped to form a body and cover for said case;

b. filling projections formed in said walls of said forms to communicate with said cavities;

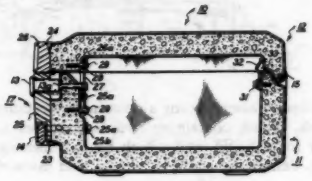
c. said cavities being filled with fire resistant insulation material cast in said forms to enclose the interior of said case and partially fill said filling projections;

d. said filling projections being cut away to leave exposed insulation bounded by said resin walls; and

e. resin material covering said exposed insulation for sealing and concealing said insulation material.

11. A method of making a case fire resistant, said case having a body and cover that can be held releasably closed together, said method comprising:

a. molding forms for said body and cover of resin material having double walls defining cavities in the shapes of said body and cover and having filling projections communicating with said cavities;



b. flowing fire resistant insulation material through said filling projections and into said cavities to fill said cavities and portions of said filling projections;

c. after said insulation material is set, cutting off said filling projections and said insulation material in said filling projections to leave severed stubs of exposed insulation bounded by said forms; and

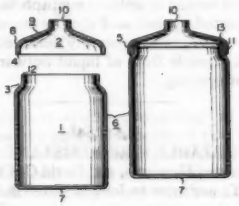
d. securing resin material over said severed stubs for covering and sealing said insulation material.

4,541,546

DRAW-IRONED METAL VESSEL HAVING CIRCUMFERENTIAL SIDE SEAM

Katsuhiro Imazu, Yokohama; Hiroshi Matsubayashi, Kamakura; Makoto Horiguchi, Fujisawa; Kazuo Taira, Tokyo; Seishichi Kobayashi, Yokohama, and Hiroshi Ueno, Yokosuka, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Continuation of Ser. No. 443,598, Nov. 22, 1982, abandoned.
This application Jan. 3, 1985, Ser. No. 686,640
Int. Cl.[4] H05B *3/68*
U.S. Cl. 220—456 **4 Claims**



1. In a draw-ironed metal vessel having a circumferential side seam, which is formed by lap-bonding of open end portions of upper and lower members by means of an adhesive, each consisting of a seamless molded metal cup, an improvement which comprises:

(a) the lower member comprising a tall thin side wall portion and a thick bottom portion, said lower member being formed by draw-ironing a tin-plated steel plate at an ironing ration (R_I) of at least 20%, said ironing ration (R_I) being defined by the following formula:

$$R_I = \frac{T_B - T_W}{T_B} \times 100$$

wherein T_B is the thickness of the bottom portion of the lower member and T_W is the thickness of the sidewall portion of the lower member, said lower member being subjected to a surface treatment with a phosphate and/or a chromate and having a protecting varnish on the entire surface thereof;

(b) The upper member comprising a short side wall, a top wall and a spout having a diameter smaller than that of the side wall, said upper member being formed by shallow drawing of a protecting varnish-coated tin-plated steel plate; and

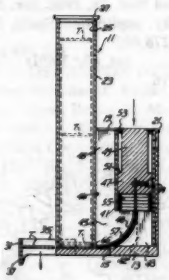
(c) a heat-melt-bondable resin adhesive interposed between the open end portions of the upper and lower members.

4,541,547

TOKEN OR CARD DISPENSER

Ronald J. Miknyocki, 500 W. State St., East Tawas, Mich. 48730, and William A. Lambert, 9708 Buckingham, Allen Park, Mich. 48101

Filed Oct. 21, 1983, Ser. No. 544,221
Int. Cl.[4] B65G *59/06*
U.S. Cl. 221—260 **6 Claims**



1. A chip, token, coin and card dispenser comprising a base plate having a depressed token platform thereon;

an upright open ended tube of predetermined cross-sectional shape adapted to store a stack of tokens of the same shape, overlying mounted upon and secured to said base plate above said platform, said platform defining a token slot;

an ejector strip extending transversely of said tube at its leading end guidably mounted upon said base plate within said token platform, in registry with said token slot and with the lowermost token upon said platform within said slot;

operable reciprocal means connected to the tube and to the other end of said ejector strip, upon movement in one direction advancing said strip ejecting said lowermost token from said base plate, and upon movement in the opposite direction retracting said strip permitting the next lowermost token to drop into said token slot upon said base plate;

said ejector strip being flexible;

said manually operable means including a guide tube laterally spaced from said token tube and secured thereto and mounted upon said base plate;

a manually operable plunger guidably mounted within said guide tube at one end connected to said ejector strip;

a compression spring supported within said guide tube bearing against and normally holding said plunger and ejector strip retracted;

manual advancing of said plunger compressing said spring and advancing said ejector strip;

said plunger having a shank of reduced diameter defining a stop shoulder, and an apertured washer secured within the upper end of said guide tube limiting retraction of said plunger.

4,541,548

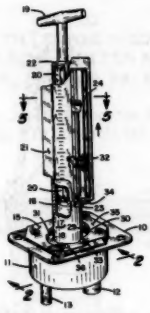
DISPENSER WITH SNIFF DEVICE AND METHOD

Jimmy W. Tam, Shoreview; Gary W. Odegaard, Fridley; William C. Scherer, Minneapolis, and Alan P. Lonneman, Coon Rapids, all of Minn., assignors to Red Devil, Inc., Union, N.J.

Filed Aug. 15, 1983, Ser. No. 523,129

Int. Cl.⁴ B67D *5/22*

U.S. Cl. 222—48 **4 Claims**



1. In combination with a fluid dispensing apparatus having a base assembly including a dispensing outlet, an actuating assembly including a reciprocable element associated with said base assembly for a dispensing stroke toward said base assembly to effect dispensing through said outlet and a retractive suction stroke away from said base assembly, and an auxiliary assembly operably connected to said reciprocable element for reciprocating movement therewith, said auxiliary assembly being indexable rotatably between two different stations with respect to said base assembly, one said station being a primary station at which said dispensing stroke for said dispensing is effected, the improvement comprising a sniff device consisting essentially of an inclined plane member on said base generally oriented transversely to the reciprocating movement of said reciprocable element with the level of said inclined plane member being least at said primary station, and an abutment member for sliding movement on said inclined plane member as said auxiliary assembly is indexed rotatably from said primary station, one of said members being on said base assembly and the other of said members being on said auxiliary assembly, whereby a slight retractive movement of said reciprocable element and consequent sniff of residual fluid of dispensing back into said dispensing outlet is effected as said auxiliary assembly is indexed rotatably from said primary station after a said dispensing stroke.

4,541,549

AGRICULTURAL HOPPER STRUCTURE

Howard C. Hadley, Urbandale, and Marvin L. Bigbee, Ankeny, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Mar. 18, 1983, Ser. No. 476,886

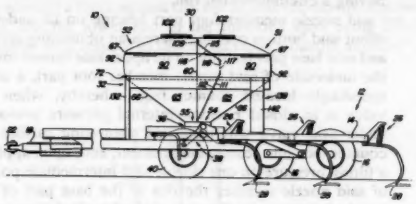
Int. Cl.⁴ B67D *5/60*

U.S. Cl. 222—143 **46 Claims**

9. In an agricultural implement having a main frame, container structure for containing granular material, said container structure comprising:

a support frame connected to the main frame and extending upwardly therefrom to a horizontal portion lying substantially in a horizontal plane, the support frame opening inwardly and downwardly from the horizontal portion; and

a flexible hopper including a lower funnel-shaped portion and an upper container portion having a material-containing capacity substantially greater than the funnel-shaped portion, said flexible hopper including a downwardly directed ledge portion located between the upper and lower container portions and supported on the horizontal



frame portion with the lower portion extending downwardly through the support frame opening, and wherein the upper container portion has upright sidewalls, the sidewalls being concave outwardly to approximate the shape of said upper container portion when filled with material.

4,541,550

SELF-CLOSING TILTING VALVE

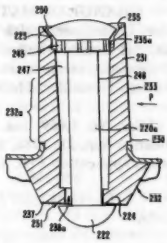
Luigi Del Bon, P.O. Box 2, 4663 Aarburg, Switzerland

Continuation-in-part of Ser. No. 284,221, Jul. 17, 1981, Pat. No. 4,389,004. This application May 20, 1983, Ser. No. 496,463

Claims priority, application Switzerland, Aug. 5, 1980, 5911/80

Int. Cl.⁴ B65D *83/14*

U.S. Cl. 222—402.22 **2 Claims**



1. Self-closing tilting valve sealingly insertable in a lid for a container fillable with product under excess pressure and provided with a valve mounting, which valve comprises

an essentially rigid mandrel member having a base part and a tip part,

an enveloping nozzle member surrounding said mandrel member and having an axial product passage surrounded by an inner wall and receiving said mandrel member therein, a head part with an outlet opening for said axial passageway, a foot part having a bottom opening for said axial passageway, and an intermediate portion extending axially from said head part toward said foot part,

the top part of said mandrel member bearing a conically tapered sidewall of axially outwardly increasing diameter, and the head part of said enveloping member having an outer end wall about said outlet opening which outer end wall about said outlet opening is correspondingly tapered to sealing contact with said top part sidewall in closed position,

(a) said intermediate portion of said nozzle member between said head part and said foot part thereof, being substantially rigid,

(b) said mandrel member projecting downwardly out of said foot part of said nozzle member and having a base part thereof extending radially outwardly beneath the underside of the nozzle member foot part away from the central longitudinal axis of said mandrel member, said base part having a circumferential rim,

(c) said nozzle member foot part bearing on its underside about said bottom opening therein an obturating surface, and said base part bearing on its upper side turned toward the underside of said nozzle member foot part, a correspondingly located counter face, whereby, when said valve is in closed position internal pressure prevailing under said valve will urge said obturating surface and counter face into sealing engagement; and, upon applying a tilting pressure on one side of said intermediate portion of said nozzle member the rim of the base part of said mandrel member on the same side of applied tilting pressure remains supported on said underside of said nozzle member foot part while the rim of the base part of said mandrel member on the opposite side is moved downwardly out of contact with said underside of said nozzle member foot part, thereby opening said valve, and said rigid mandrel member is moved axially downwardly in said axial nozzle member passage, and

(d) distancing means radially projecting at the lower end of one of said conically tapered walls, which distancing means widen the upper end of said nozzle member in the region at and below the lower end of said conically tapered sidewall thereof and thereby cause a gap to be formed between said conically tapered sidewalls when said mandrel member is moved downwardly axially in said axial passage during opening of said valve.

4,541,551

SEALING TOP FOR CONTAINERS FOR POWDERED OR GRANULAR MATERIALS

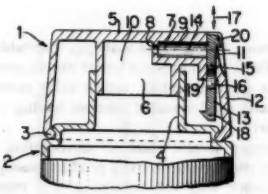
Peter Vierkötter, Leverkusen; Erich Türk, Langenfeld; Bernd-Dieter Holdt, and Ronald Menke, both of Düsseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Continuation of Ser. No. 1,459, Jan. 8, 1979, abandoned. This application Sep. 21, 1981, Ser. No. 303,840

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1978, 2801327

Int. Cl.[4] G01F *11/26*

U.S. Cl. 222—456 **6 Claims**



1. A seal for a container for powders or granular products having a non-clogging lockable opening for the selective dispensing of the container contents by pressure exerted on the container characterized in that said seal is provided with an opening terminating in a lock, said opening comprising a substantially uniform inner channel and a substantially uniform outer channel, both of said channels being aligned in the direction of discharge and in a direction perpendicular to the longitudinal axis of the container, said outer channel extending from the inner channel outward and the cross-sectional area and the length of the inner channel each being small relative to the cross-sectional area and the length of the outer channel, the cross-section-to-length ratio of the outer channel being at least 3:4, and said lock blocking the outer channel of said opening, said lock comprising a slider valve movable perpendicularly to the longitudinal direction of discharge.

4,541,552

APPARATUS FOR METERING LIQUIDS OR SEMILIQUIDS

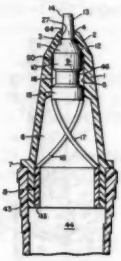
Heinz Scheithauer, Winzelnerstrasse 1, 7230 Schramberg, Fed. Rep. of Germany

Filed Aug. 19, 1981, Ser. No. 294,249

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1980, 3032054

Int. Cl.[4] B65D *25/38*

U.S. Cl. 222—501 **7 Claims**



1. A device for metering and dispensing non-pressurized liquid or semiliquid mediums comprising:

(a) a tube including (i) a conical tapered discharge port and (ii) a cylindrical inner wall having a conical tapered inner wall end portion thereto adjacent said discharge port for forming a first metering valve seat, said tube having an opposite end portion to said conical tapered end portion for forming a flared storage chamber for storing a non-pressurized liquid or semiliquid medium, and an intermediate inner wall portion of the cylindrical inner wall of the tube for forming a second metering valve seat;

(b) a metering valve body including (i) first and second valve members for interacting respectively with said first and second valve seats to form first and second valves, wherein the second valve member is a cylindrical outer wall end portion slidable within the intermediate inner wall portion between open and closed valve positions with said second metering valve seat, and wherein the first valve member is a conical outer wall end portion opposite the cylindrical end portion, complementing said conical tapered inner wall end portion of said first metering valve seat and selectively movable between open and closed valve positions with said first metering valve seat, an annular duct being formed between the conical tapered end portions of said valve body and said first valve seat in the open valve portion, and (ii) metering means on said valve body for forming a sealed metering medium chamber between said valve members of the valve body and said valve seats, the chamber being sealed at one end by the conical outer wall end portion of the valve body engaging the conical tapered inner wall end portion of the valve seat and at the other end by the cylindrical outer wall end portion engaging the cylindrical inner wall of the tube for holding a predetermined amount of liquid or semiliquid medium therein when the first and second valves are in normally-closed positions and for dispensing the predetermined amount of medium when the first valve is in an open position;

(c) at least one spring for normally biasing said valve body to closed medium sealing positions against the first and second valve seats of said tube; and

(d) a conical tapered tip on the end of said valve body which extends through and complements said conical tapered discharge port and sealingly closes said tube discharge

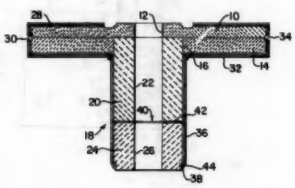
port when the valve body is spring-biased in the closed position against the first valve seat, said tip being manually actuated against the spring for selectively moving the valve body inwardly to a selected open valve position away from the first valve seat, wherein the inward movement of the tip regulates the width of the annular duct formed between the conical tapered wall end portion of the metering valve body and first valve seat for selecting the amount of liquid or semiliquid medium to be discharged from the metering chamber and determines whether the valve body is in an open valve position away from the second valve seat such that the metering chamber is in medium communication with said flared storage chamber.

4,541,553

INTERLOCKING COLLECTOR NOZZLE ASSEMBLY FOR POURING MOLTEN METAL

Albert L. McQuillen, Jr., Pittsburgh, Pa., assignor to Servsteel, Inc., Houston, Pa.

Filed Sep. 20, 1983, Ser. No. 533,998
Int. Cl.⁴ B22D *37/00*
U.S. Cl. 222—591 **2 Claims**



1. A collector nozzle for pouring molten metal comprising upper and lower nozzle portions of substantially equal outside diameters, said nozzle portions comprising different refractory materials and having abutting end surfaces in contact to form a continuous nozzle length, the abutting end surface of one of said nozzle portions being nonlineal to define a projection and the abutting end surface of the other of said nozzle portions being nonlineal to define a complementary groove with said projection extending into and snugly received by said groove, said projection and groove cemented together to secure an interlocking joint with a mortar which has been heat set at a temperature no higher than 800° F., said nozzle being cylindrical and including a cylindrical metal housing secured around the exterior thereof.

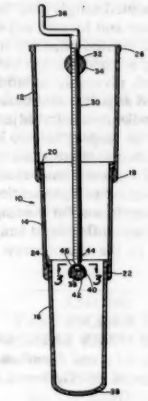
4,541,554

SOCK STRETCHER

Donald A. Endress, HC 65, Box 1700, Hominy, Okla. 74035

Filed Dec. 24, 1984, Ser. No. 685,895
Int. Cl.⁴ D06C *15/00, 5/00*
U.S. Cl. 223—66 **6 Claims**

1. A sock stretcher for stretching a sock of the type normally worn over an arm stump or leg stump which is interfitted with an artificial prosthesis comprising a plurality of sleeves each in the form of a hollow cylinder, nested coaxially one within the other and disposed with their central axes in a generally vertical direction for the purpose of this claim description, each sleeve having an inner diameter slightly larger than the outer diameter of the next adjacent inner sleeve, each sleeve having a lip at its lower end which projects radially inwardly towards the outer surface of the next adjacent inner sleeve, each inner sleeve having a circumferential lip at its upper end which extends radially outwardly towards the inner surface of the next adjacent outer sleeve, whereby the sleeves can telescope outwardly until the outwardly extending lips come into contact with the inwardly projecting lips on the next adjacent outerlying sleeves, an elongated threaded shaft mounted along the vertical central axes of the sleeves, the outermost sleeve being provided with a first transverse bar extending diametrically across this sleeve below the top thereof, the threaded shaft passing through a threaded means mounted in the center of this first transverse bar, a second transverse bar mounted adjacent the top of the innermost sleeve, the lower end of the threaded shaft being connected to the second bar so as to be able to exert a force against this bar in both directions of movement, but the lower end of the threaded shaft being freely rotatable with respect to this second bar, a handle mounted at



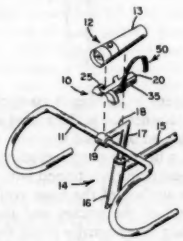
the upper end of the threaded shaft to permit the turning thereof, whereby a damp sock of the type referred to herein can be inserted over the sleeves in their retracted telescopic condition such that the upper open end of the sock will be adjacent the top of the outermost sleeve, the top of the sock then being secured to the top of the outermost sleeve by a suitable clamp, the handle then being turned to rotate the threaded shaft in a given rotary direction to move the sleeves towards their extended telescopic condition to stretch the sock a desired amount.

4,541,555

METHOD AND APPARATUS FOR MOUNTING FLASHLIGHTS TO BICYCLES

Mallory F. Miree, 3512 Springhill Rd., Birmingham, Ala. 35223

Filed Dec. 7, 1983, Ser. No. 559,098
Int. Cl.⁴ F21V *33/00*
U.S. Cl. 224—41 **21 Claims**



1. Apparatus for mounting a flashlight to a bicycle having a steering stem formed with a neck and with a collar through which handlebars extend, and with the apparatus comprising an elongaged support of a selected support length having a bottom surface contoured to be mated against the bicycle steering stem neck adjacent the collar and a concave upper

surface in which a flashlight may be nestled, and a flexible strap secured substantially centrally of said selected support length to said support, said strap being of a sufficient strap length as to be wrapped over a flashlight nestled in said support concave upper surface and under the bicycle stem neck atop which the support is mated with one strap portion overlapping and fastened to another strap portion by fastening means whereby the strap is the sole essential element attaching the support to the bicycle and to the flashlight to the support.

6. Apparatus for mounting a flashlight to a bicycle along a bicycle axis comprising an elongated base having a bottom surface contoured to be seated snugly atop the bicycle steering stem neck with a rear base end located adjacent the stem and with a forward base end located adjacent the neck collar, an elongated cradle having a concave top surface, in which a flashlight may be nestled, pivotably mounted atop said base along a pivot axis located adjacent said base forward end and a forward end of said cradle, means for adjusting the height of a said cradle rear end with respect to said base rear end that includes a threaded post mounted atop said base upon which a thumbscrew is threaded between said cradle and said base whereby the angle of tilt of a flashlight nestled atop said cradle may be altered, and binding means for binding said base snugly to the bicycle stem neck and a flashlight snugly to said cradle so as to apply pressure to the thumbscrew and hold it in a preset position.

4,541,556

POSITIVE DELIVERY KNIFE SHEATH

Walter W. Collins, North, S.C., and Jonathan P. Reinschreiber, Gastonia, N.C., assignors to Gerber Legendary Blades, Portland, Oreg.

Filed Mar. 26, 1984, Ser. No. 593,707

Int. Cl.[4] B26B *29/02*

U.S. Cl. 224—196 **5 Claims**

1. A positive delivery knife sheath comprising a back wall and a front wall interconnected at their sides and lower ends to define a pocket having an open end opposite the lower end for reception of a knife, a flexible strap including a free end and a fixed end, the fixed end being positioned within the pocket and fastened to the inner surface of the front wall at a point intermediate the open end of the pocket and its lower end, said flexible strap extending downwardly along the front wall from the juncture of its free end with the front wall, across the lower end of the pocket, upwardly along the back wall, forwardly across the said open end of the pocket and downwardly along the outer surface of the front wall, and means for releasably connecting the free end of the flexible strap to the outer surface of the front wall at variable points spaced vertically from each other along the outer surface of the front wall, whereby the free end of the flexible strap may be disconnected from the front wall and the strap moved to open the pocket for reception of a knife within the pocket and engagable with that portion of the flexible strap at the lower end of the pocket, after which the flexible strap may be positioned across the pocket above the knife and the free end of the flexible strap connected to the outer surface of the front wall at a selected point depending on the length of the knife, and whereby the subsequent disconnection of the free end of the strap from the front wall and movement of the strap to open the pocket will positively deliver the knife from the sheath.

4,541,557

MAGNETIC TAPE GUIDE ROLLER SYSTEM

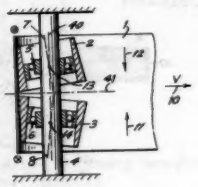
Wolfgang Fell, Seeheim; Heinrich Zahn, Rossdorf; Peter Gunschmann, Darmstadt, and Winfried Büchel, Büttelborn, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 6, 1983, Ser. No. 492,428

Claims priority, application Fed. Rep. of Germany, May 12, 1982, 3217762

Int. Cl.[4] B65H *27/00*

U.S. Cl. 226—191 **13 Claims**



1. In combination with magnetic tape (1),

a guide roller system for dynamically centering the tape, while running, against lateral shifting, in a precisely predetermined position with respect to a datum (41), without damaging the edges of the tape, having

a support shaft (4) having a shaft axis (40);

two frusto-conical rollers (2,3);

and bearings (5,6) for rotatably mounting the rollers on the shaft,

wherein, in accordance with the invention,

said rollers (2,3) are rotatable, independently of each other, about instantaneous axes of rotation (7, 8);

said bearings are located between the shaft and the respective rollers, and rotatably position the rollers on the shaft, with spacing from each other, mirror-symmetrically with respect to said datum, and being characterized by permitting individual deflection or tipping or tilting of the rollers, about respective tilt axes (13,14) which intersect

(1) the instantaneous axes (7,8) of rotation of the respective rollers, and

(2) the axis (40) of the shaft (4), under force applied by the magnetic tape running in either direction over the surfaces of the rollers.

4,541,558

RIVETING PRESS SAFETY

Ernst Herten, and Eilhelm Elringhaus, both of Stolberg, Fed. Rep. of Germany, assignors to William Prym-Werke Kg, Stolberg, Fed. Rep. of Germany

Filed Apr. 11, 1984, Ser. No. 599,172

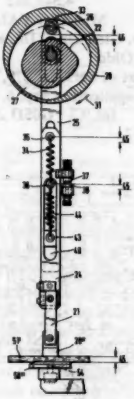
Claims priority, application Fed. Rep. of Germany, Apr. 13, 1983, 3313351

Int. Cl.[4] B21J *15/28*

U.S. Cl. 227—1 **17 Claims**

1. In a machine for applying components of articles of hardware or the like to sheet- or web-like workpieces, the combination of a first tool; a second tool movable toward said first tool from a retracted position in which said tools define a space for

a workpiece therebetween; first drive means for reciprocating said second tool from and back to said retracted position; means for releasably holding a component between the workpiece in said space and said second tool, said holding means being movable with and relative to said second tool between a first position remote from and a plurality of second positions nearer to said first tool; and second drive means for moving said holding means between said positions, including a rotary cam defining an endless path, a first reciprocable motion transmitting member having a follower extending into said path, a second motion transmitting member connected with said holding means, means for coupling said members to each other with



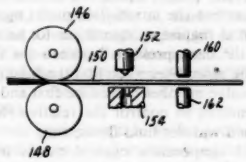
limited freedom of movement, means for yieldably biasing said members in directions to increase the distance between said follower and said holding means, a prime mover operable to rotate said cam, and a device for preventing the operation of said prime mover in response to movement of one of said members relative to the other of said members against the opposition of said biasing means when said holding means encounters an obstacle on its way from the first to a second position, said path having a portion which allows said follower to move radially of said cam in that angular position of the cam in which said holding means is at least close to a second position.

4,541,559

METHOD OF MAKING ELECTRICAL CONNECTIONS BETWEEN OPPOSING METAL FOILS HAVING A FLEXIBLE, INSULATING LAYER SANDWICHED THEREBETWEEN

Philip W. O'Brien, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 16, 1983, Ser. No. 552,306
Int. Cl.⁴ B23K *20/12*
U.S. Cl. 228—117 **3 Claims**



1. A method of forming a marker for use in an electronic article surveillance system, wherein said marker comprises a circuit resonant at at least one radio frequency, wherein said method includes the steps of

(a) providing a flexible insulating sheet,

(b) forming a laminate by affixing to opposing surfaces of said sheet first and second metal foils configured as predetermined patterns, said opposing patterns and the insulating sheet sandwiched therebetween forming at least one capacitive element, and at least one of said first and second patterns forming at least one multi-turn inductive element which in combination with said capacitive element results in an inductive-capactive circuit resonant at at least one radio frequency, and

(c) forming an electrical contact between at least one selected point on the opposing patterns, wherein said forming step comprises

extruding a localized area of said laminate into a die cavity and in so doing, shearing the insulative sheet at the periphery of the die cavity to cause metal to metal contact between the opposing metal foils at said periphery, and

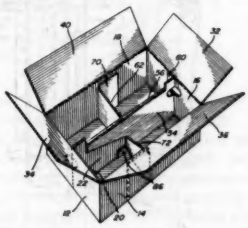
forcing the extruded area back into a substantially planar relationship with the remainder of the laminate to cause the extruded area to form a plug therein and a permanent electrical contact between the opposing foils at the periphery.

4,541,560

PARTITIONED BOX

David Fischer, Downsview, Canada, assignor to Domtar Inc, Montreal, Canada

Filed Jan. 13, 1984, Ser. No. 570,605
Int. Cl.⁴ B65D *5/48*
U.S. Cl. 229—27 **13 Claims**



1. A blank comprising a first end wall, a first side wall, a second end wall, a second side wall, an end glue panel and a first partition panel foldably connected by a set of substantially parallel fold lines, a second partition panel foldably connected to said first partition panel via a connecting fold line substantially perpendicular to said set of fold lines, a first glue flap connected to the end of said second partition panel remote from said end glue panel by a first fold line substantially parallel to said set of fold lines, a first transverse partition formed in said first partition panel via a line of severance spaced from said connecting fold line, said first transverse partition connected at an end thereof closest said end glue panel to said first partition panel via a second fold line substantially parallel to said set of fold lines, a second glue flap foldably connected to the end of said first transverse partition remote from said end glue panel via a third fold line substantially parallel to said set of fold lines, a second transverse partition formed in said second partition panel via a line of severance spaced from said connecting fold line and connected to said second partition panel at the end of said second transverse partition closest to said first glue flap via a fourth fold line substantially parallel to said set of fold lines, a third glue flap connected to the end of said second transverse partition remote from said first glue flap via a fifth fold line substantially parallel to said set of fold lines.

8. A carton comprising a first end wall, a first side wall, a second end wall, a second side wall and an end glue panel

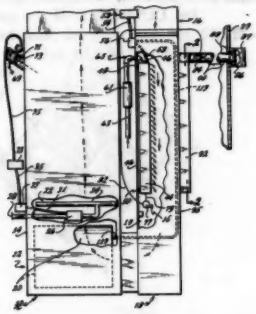
secured in face-to-face relationship with said first end wall, a first longitudinal partition panel foldably connected to said end glue panel and extending longitudinally of said carton spaced from said side walls, a first transverse partition formed from said first longitudinal partition panel at the end of said first longitudinal partition panel remote from said end glue panel with one end of said first transverse partition being foldably connected to said first longitudinal partition panel and an opposite end secured to one of said first and second side walls with a glue flap, a second longitudinal partition panel folded into face-to-face relationship to said first longitudial partition panel via a connecting fold line extending longitudinally of said box, a glue flap at the end of said second longitudinal partition panel remote from said end glue panel, said glue flap being secured in face-to-face relationship with said second end wall, a second transverse partition formed from said second longitudinal partition panel and connected at one end of said second longitudinal partition panel via a fold line and connected at its opposite end to the other of said first and second side walls via a glue flap.

4,541,561

HEATING EQUIPMENT AND METHOD OF OPERATING SAME

Robert E. Smith, 2210 W. Garden St., Peoria, Ill. 61605

Filed Jun. 23, 1983, Ser. No. 507,152
Int. Cl.[4] F24D *1/00, 5/00*
U.S. Cl. 236—10 **8 Claims**



1. Heating equipment having a heating unit for heating space within a building, comprising:

a forced air furnace having an air recirculating system including an air recirculating blower means, said recirculating system including a cold air return having a cold air return plenum chamber through which flows cold air in a downward direction from said space to said furnace for heating by said unit;

catalytic space heating means;

means for mounting said space heating means wholly within said plenum chamber for heating the cold air therein;

first thermostat means responsive to a first higher predetermined ambient temperature for activating said space heating means for heating air within said recirculating system;

first conduit means connected electrically between the output of said thermostat means and the air recirculating blower means of the furnace system for sending an electrical signal to said blower means to activate it when said thermostat means is energized upon the ambient temperature falling below said first predetermined temperature to draw said cold air downwardly through said cold air plenum chamber into contact with said space heating means for heating said cold air flowing therepast;

means defining at least one opening in said plenum chamber;

conduit means disposed on the outside of said plenum chamber and connected in fluid communication with the interior of said chamber via said opening;

auxiliary blower means for supplying air to said heating means via said conduit to the interior of said plenum chamber to facilitate the activation of said heating means; and

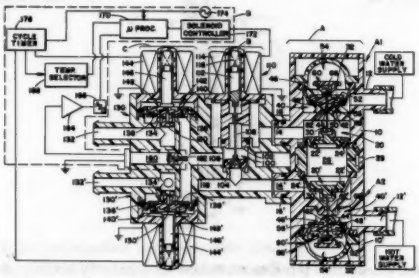
second thermostat means and second conduit means responsive to a second lower predetermined ambient temperature for activating the heating unit of the forced air furnace to provide auxiliary heating for the space within the building.

4,541,562

MIXING VALVE

Keith E. Zukausky, Glen Ellyn, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 279,763, Jul. 2, 1981, Pat. No. 4,444,215. This application Sep. 6, 1983, Ser. No. 529,365
Int. Cl.[4] G05D *23/19*
U.S. Cl. 236—12.12 **19 Claims**



1. A fluid mixing apparatus for mixing a cooler fluid flow with a warmer fluid flow to produce a mixed fluid flow having a selectable intermediate temperature, the mixing apparatus comprising:

means defining a cooler fluid inlet which is adapted to be connected with a source of the cooler fluid under pressure to receive the cooler fluid flow therefrom;

a first regulating assembly operatively connected with the cooler fluid inlet means for regulating the pressure of the cooler fluid;

means for defining a warmer fluid inlet which is adapted to be connected with a source of the warmer fluid under pressure to receive the warmer fluid flow therefrom;

a second regulating assembly operatively connected with the warmer fluid inlet means for regulating the pressure of the warmer fluid;

means for defining at least one mixed fluid outlet for discharging the mixed fluid flow, the mixed fluid flow developing a back pressure adjacent the mixed fluid outlet means;

a fluid pressure proportioning valve member movably disposed between the mixed fluid outlet means and the first and second regulating assemblies for selectively proportioning the back pressure between the first and second regulating assemblies, such that the fluid pressure proportioning valve member causes the first and second regulating assemblies to control the relative flow rates of the cooler and warmer fluid flows; and,

mixed fluid temperature control means for controlling a median position of the fluid pressure proportioning valve member and for causing the fluid pressure proportioning valve member to dither about the median position such that the mixed fluid substantially maintains a selected intermediate temperature.

4,541,563
ELECTRONIC VALVE CONTROL APPARATUS

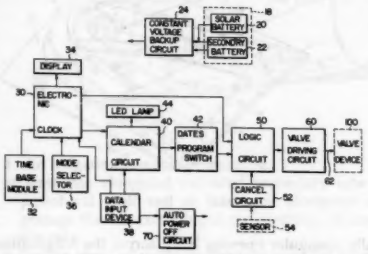
Tokio Uetsuhara, Urawa, Japan, assignor to Mitsubishi Mining & Cement Co., Ltd., Tokyo, Japan

Filed Aug. 16, 1983, Ser. No. 523,689

Claims priority, application Japan, Aug. 25, 1982, 57-127407[U]

Int. Cl.⁴ A01G *25/16*

U.S. Cl. 239—64 **2 Claims**



1. In a valve control system including at least one valve device connected to a supply source of fluid under pressure and a control apparatus to operate the valve device, an improved control apparatus comprising:

an electronic clock which delivers output time pulse signals indicating the passage of time to a logic circuit and delivers output signals of valve operation time schedules preset in itself to a calendar circuit;

a calendar circuit which counts units of days and delivers output signals of valve operation times on the preset days to a logic circuit;

a logic circuit which compares the time pulse signals from said electronic clock with the input signals from said calendar circuit and when they coincide delivers output actuating signals to a valve driving circuit;

means for setting sprinkling time schedule on desired days arranged manually according to direct observation of the area to be sprinkled;

a cancel circuit which cancels the preset sprinkling current time schedule according to a signal from a rain sensor;

an automatic power off circuit which automatically turns off check signal lamps and displays to save energy;

a valve driving circuit which is actuated by said logic circuit and controls the valve device; and

an electric power source circuit consisting of a solar battery and a secondary battery, which supplies electricity to said electronic clock, said calendar circuit, said logic circuit, said cancel circuit, said automatic power off circuit, said valve driving circuit and a valve device that is to be operated.

4,541,564
ULTRASONIC LIQUID ATOMIZER, PARTICULARLY FOR HIGH VOLUME FLOW RATES

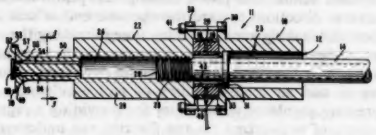
Harvey L. Berger, Poughkeepsie; A. Earle Ericson, Pleasant Valley, and Carl Levine, Poughkeepsie, all of N.Y., assignors to Sono-Tek Corporation, Poughkeepsie, N.Y.

Filed Jan. 5, 1983, Ser. No. 455,757

Int. Cl.⁴ B05B *3/14*

U.S. Cl. 239—102 **24 Claims**

1. An ultrasonic liquid atomizer tip for providing an atomized spray of liquid comprising an atomizing surface, a plurality of orifices in the atomizing surface through which liquid is delivered to the atomizing surface and a baffle disposed to be operative adjacent to that portion of the atomizing surface in which all of the orifices are disposed and spaced from the atomizing surface, and having a flat surface of predetermined area facing and substantially parallel to the atomizing surface, for preventing unatomized liquid from leaving the atomizer tip



and entering the atomized spray through said surface of predetermined area adjacent the tip.

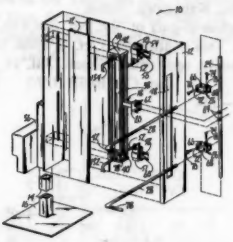
4,541,565
AIR POWERED RECIPROCATOR

Thomas R. Deimerly, 308 Orchard Dr., and Rowland M. Van Heukelom, 2103 S. Sixth St., both of Marshalltown, Iowa 50158

Filed Feb. 28, 1983, Ser. No. 470,552

Int. Cl.⁴ B05B *3/18*

U.S. Cl. 239—178 **7 Claims**



1. A pneumatic powered oscillator comprising:

(a) a cylinder of elongated shape having first and second opposite ends, said first and second ends each having means for introducing and exhausting pressurized air;

(b) piston means having first and second opposite sides facing said first and second ends of said cylinder respectively and being slidably moveable within said cylinder between a first position closest to said first end of said cylinder, to a second position closest to said second end of said cylinder;

(c) an arm means moveably responsive to the movement of said piston means and having an outward end extending latitudinally outwardly from said cylinder;

(d) framework means removeably attachable to said outward end of said arm having extension members for the mounting of spraying means for the spraying of substances;

(e) air logic circuitry means for the channeling of pressurized air of different pressures and amounts to each of said means for intaking and exhausting pressurized air at predetermined times determined by the position of said piston within said cylinder, said air logic circuitry introducing a pre-determined amount of pressurized air to said means for intaking and exhausting pressurized air at said first end of said cylinder when said piston reaches said first position while concurrently exhausting a pre-determined amount of pressurized air from said means for intaking and exhausting pressurized air of said second end of said cylinder and introducing a pre-determined amount of pressurized air into said means for intaking and exhausting pressurized air at said second end of said cylinder when said piston reaches said second position while concurrently exhausting a pre-determined amount of pressurized air from said means for intaking and exhausting pressurized air of said first end of said cylinder, so that upon reaching said first

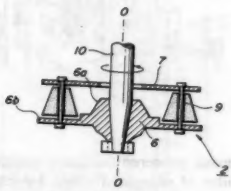
or second position in said cylinder, pressurized air is introduced in front of said piston and pressurized air is exhausted behind said piston causing said piston to quickly reverse directions toward the opposite end of said cylinder while taking a minimum lag time in making the reversal of direction, said air logic circuitry further comprising a manually operated on/off valve for entering pressurized air to said air logic circuitry of said oscillator, a high pressure regulator with a filter for providing a regulated supply of pressurized air and filtering out undesired elements from the air entering said air logic circuitry of said oscillator, a lubricator means for imparting certain substances to the pressurized air to increase said pressurized air's viscosity, a low pressure regulator for providing a lower pressure air supply than that entering the high pressure regulator for use in said air logic circuitry of said oscillator, and a speed control valve for selecting predetermined amounts of exhaust pressurized air from said cylinder to control the speed of oscillation of said piston.

4,541,566

ATOMIZING DISC FOR A CENTRIFUGAL ATOMIZER

Shoichiro Kijima, Kamakura, and Masaaki Ohkawara, Yokohama, both of Japan, assignors to Ohkawara Kakohki Kabushiki Kaisha, Kanagawa, Japan

Continuation-in-part of Ser. No. 386,450, Jun. 9, 1982, abandoned. This application Oct. 4, 1984, Ser. No. 657,520
Claims priority, application Japan, Jul. 14, 1981, 56-103395
Int. Cl.[4] B05B *3/10*
U.S. Cl. 239—224 **4 Claims**



1. An atomizing disc for a centrifugal atomizer of the type in which a plurality of atomizing pins are fixedly or rotatably mounted along the peripheral edges of upper and lower mounting discs, and a raw liquid supplied from a raw liquid feed pipe by rotation of the atomizing disc is atomized in an outer peripheral direction after a liquid film thereof has been made uniform on the peripheral surfaces of pins, characterized in that said atomizing pins are formed into a conical configuration, an angle formed between a conical surface and a bottom surface of the atomizing pin is made below 60° and the atomizer are operated under conditions of 13–320 m/sec peripheral velocity of the disc, 1.0–4.0 of specific gravity of the raw liquid and 5–18,000 c.p. of viscosity of the raw liquid.

4,541,567

VARIABLE AREA NOZZLE VANE

Gerard E. A. Jourdain, Saintry Sur Seine, and Marcel R. Soligny, Chevilly-Larue, both of France, assignors to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation, Paris, France

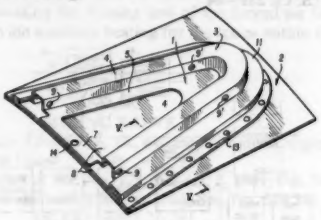
Filed Jun. 8, 1983, Ser. No. 502,203
Claims priority, application France, Jun. 28, 1982, 82 11269
Int. Cl.[4] B64C *15/02*; F02K *1/30*
U.S. Cl. 239—265.37 **7 Claims**

1. A vane for incorporation in a variable section ejection nozzle, said vane comprising

a central body including

means defining a reinforcement substantially of isoceles triangle shape with rounded apex and of channel cross-section with flanges extending from each limb of the channel substantially at right angles to the respective limb, one said flange forming an external boundary of the reinforcement and the other said flange forming an internal boundary of the reinforcement, and

means defining a cover plate with external dimensions substantially corresponding to the said external boundary of the reinforcement, a rectangular base plate of sheet material having



a generally triangular opening lying across the longitudinal axis thereof with a contour corresponding to the internal profile of the outer flange of the central body, and

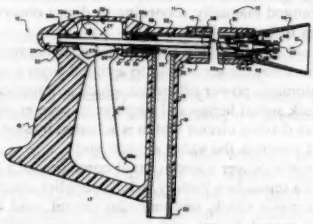
securing means serving to hold the edge portion of the central body against the plate around the substantially triangular opening.

4,541,568

SAFETY SPRAY WAND

William H. Lichfield, Box 112, Corinne, Utah 84307

Filed Dec. 27, 1982, Ser. No. 453,588
Int. Cl.[4] B05B *9/01*
U.S. Cl. 239—441 **10 Claims**



1. A wand for washing vehicles and the like comprising

a handle having a cavity therein;

discharge tube means connected into said handle;

means including a supply tube extending through a receiving cover integral with the handle and intersecting the discharge tube means for supplying fluid under pressure to the discharge tube means;

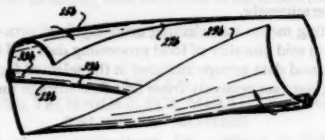
valve means including a shaft extending into the cavity and having a reactor member thereon and providing a continuously open, low pressure through the discharge tube means in a released position of the valve and a high pressure flow through the discharge tube means in an actuated position of the valve; and

means for actuating the valve means including a trigger pivotally connected to the handle and extending into the cavity and a cam on the trigger in engagement with the reactor member on the shaft, whereby pulling on the trigger will move the shaft to actuate the valve means.

4,541,569
DRIP IRRIGATION CONDUIT AND METHOD OF MAKING THE SAME

John M. Langa, Alpine, Calif., assignor to RIS Irrigation Systems, El Cajon, Calif.

Division of Ser. No. 275,837, Jun. 22, 1981, Pat. No. 4,474,330.
This application May 16, 1984, Ser. No. 610,960
Int. Cl.[4] A01G *25/02*; B29D *23/03*
U.S. Cl. 239—450 14 Claims

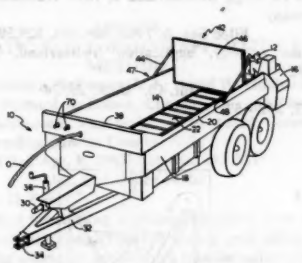


1. An irrigation conduit comprising:
at least one elongated extruded secondary tube having a peripheral wall and at least one elongated secondary passage therein extending in the direction of elongation of the tube;
a flexible sheet of water impervious material which is separate from the secondary tube;
first means for attaching said secondary tube to the flexible sheet of water impervious material;
second means other than said secondary tube for attaching longitudinally extending portions of said sheet to each other to form at least one seam and to provide at least one supply tube having a longitudinal supply passage with said secondary tube extending along the supply tube;
the cross-sectional area of the supply passage being greater than the cross-sectional area of the secondary passage;
transfer ports leading between said passages; and
discharge ports leading from the secondary passage to the exterior of said secondary tube and said supply tube.

4,541,570
ENDGATE FOR MANURE SPREADER

David M. Rieke, and Larry J. Pingry, both of Celina, Ohio, assignors to The Paul Revere Corporation, Coldwater, Ohio

Filed Dec. 7, 1983, Ser. No. 558,824
Int. Cl.[4] A01C *19/00, 15/16*
U.S. Cl. 239—676 5 Claims

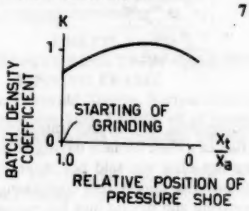


1. A movable endgate for a manure spreader having an open topped cargo box with sidewalls, a front wall and a bottom, there being transversely mounted beaters at the rear of the box and an apron conveyor along the bottom of the box for moving material rearwardly toward the beaters, said endgate comprising:
a generally U-shaped, box spanning structural member having its central region positioned just forward of said beaters, the open end of each leg of said structural member facing forward and being attached by pivotal means to the top edge of said box sidewall, one pivotal attachment point being on each exterior sidewall of said cargo box;
a rectangular panel having a length adequate to span the inside width of the cargo box and a width at least equal to the inside heighth of said box, said panel being attached near its top edge by hinge joint means to the central portion of said structural member;
means for rotating said structural member about its pivot points from a rest position to an endgate-open position wherein the bottom edge of said rectangular panel is lifted to allow rearward flow of material from said cargo box, said rectangular panel in said endgate-open position hanging from said hinge points under the pull of gravity pivotally swinging about a generally vertical plane thereby providing both cargo leveling and protection from beater thrown material; and
stop means protruding from said structural member and contacting the hinge mounted panel to prevent it from swinging closer than a predetermined distance from said beaters when said endgate is in the closed or partially open condition.

4,541,571
METHOD OF CONTROLLING A GRINDING PROCESS IN A POCKET GRINDER

Anssi Kärnä , and Heikki Liimatainen, both of Inkeroinen, Finland, assignors to Oy Tampella AB, Tampere, Finland

Filed Nov. 9, 1982, Ser. No. 440,298
Claims priority, application Finland, Dec. 1, 1981, 813842
Int. Cl.[4] B02C *23/18*
U.S. Cl. 241—28 7 Claims



1. A method of controlling a grinding process in a pocket grinder comprising the steps of:
pressing a batch of wood in at least one pocket against a rotating grindstone by means of a pressure shoe displaceable in the pocket, density of the wood in the batch being other than constant;
calculating, at predetermined intervals at measuring points of a grinding stroke of the pressure shoe, an amount of pulp produced, said calculating being defined by the relationship:

$$M_t = A \cdot X_t \cdot D_w$$

wherein
A = cross-sectional area of the pocket,
X_t = distance of movement of the pressure shoe during the time period t, and
D_w = average density of the batch in the pocket during the grinding;
calculating a value of specific energy consumption corresponding to said amount of pulp produced;
comparing the specific energy consumption to a target figure;
controlling the grinding of the batch in response to a deviation of said specific energy consumption from said target figure, so that the specific energy consumption remains as constant as possible during an entire grinding stroke of the pressure shoe;
determining a correction factor for the density of the wood in the batch as a function of position of said pressure shoe; and

calculating a corrected amount of pulp produced by multiplying said amount of pulp produced by said correction factor, whereby the value of said specific energy is corrected to control at least one operating parameter of said pocket grinder.

4,541,572
PULVERIZING, DRYING AND TRANSPORTING SYSTEM FOR INJECTING A PULVERIZED FUEL INTO A BLAST FURNACE

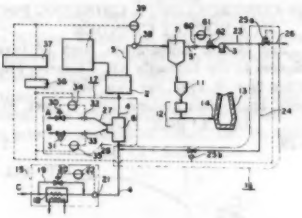
Setsuo Tamura; Kenjiro Motonaga, both of Nishinomiya; Takumi Mizokawa, Kobe; Kozo Tanaka, Miki; Katsumi Kawashima, Kobe; Takaaki Hiwatashi, Kakogawa, and Takayuki Sugahara, Akashi, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jul. 18, 1983, Ser. No. 514,886

Claims priority, application Japan, Aug. 10, 1982, 57-139627

Int. Cl.[4] B02C *21/00*

U.S. Cl. 241—31 **7 Claims**



1. A pulverizing, drying and transporting system for a pulverized fuel of a blast furnace having at least one hot stove for supplying hot blast air, said hot stove also producing a hot stove exhaust gas, said system comprising:

a pulverizing and drying unit for pulverizing lump raw fuel and drying the pulverized fuel;

first conduit means connected between at least one stove and an inlet end of said pulverizing and drying unit for supplying hot stove exhaust gas to said pulverizing and drying unit so as to dry said pulverized fuel;

heating means positioned in said first conduit means for supplying additional heat to said hot stove exhaust gas;

at least one of a temperature stabilizing means and a cooling means positioned in said first conduit means at a point upstream from said heating means;

a pulverized fuel collecting and separating means for separating said pulverized fuel from said hot stove exhaust gas;

second conduit means connected between an outlet end of said pulverizing and drying unit and said collecting and separating means; and

a first temperature sensor in said second conduit means and first controller means constructed so as to receive a signal from said first temperature sensor and to control said heating means and said cooling means as a function of said sensed temperature.

4,541,573
FOOD PROCESSOR

Masakatu Fujiwara; Takeshi Miyamoto, both of Kasai; Hiroshi Kuzuhara, Sendai, and Toshiya Morimoto, Kasai, all of Japan, assignors to Sanyo Electric Co., Ltd., Japan

Filed Jul. 26, 1983, Ser. No. 517,464

Claims priority, application Japan, Aug. 5, 1982, 57-137034; Aug. 10, 1982, 57-139610; Aug. 10, 1982, 57-139611; Sep. 10, 1982, 57-158395; Sep. 14, 1982, 57-160093

Int. Cl.[4] B02C *25/00*

U.S. Cl. 241—36 **6 Claims**

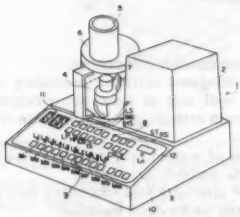
1. A food processor comprising:

a rotor rotatably provided in a container for processing food,

a motor combined with said rotor for rotating said rotor,

first storage means for storing a plurality of preprogrammed food processing data, each of said data having a plurality of data groups including speed data for determining rotational speed of said motor, time data for determining operation time of said motor and mode data for determining whether said motor is to be driven continuously or intermittently,

selecting means for selecting arbitrary food processing data from said plurality of food processing data and for providing said data groups included in the selected food processing data successively from said first storage means,



motor control means responsive to said data groups from said first storage means for controlling the rotational speed of said motor and the operation time of said motor,

a group of switch means for manually setting said data groups, said group of switch means including rotational speed setting switches, operation time setting switches and intermittent operation setting switches, and

second storage means for storing the data groups set by said switch means,

said motor control means being responsive to the data groups from said first or second storage means for controlling the rotational speed of said motor and the operation time of said motor.

4,541,574
MILLING PROCESS AND ROLLER MILL

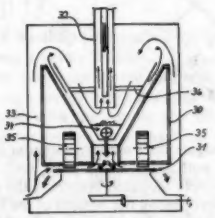
Martin H. Gygi, Rheinstrasse 5, 7890 Waldshut, Fed. Rep. of Germany

Filed Sep. 6, 1983, Ser. No. 529,594

Claims priority, application Switzerland, Sep. 6, 1982, 5295/82

Int. Cl.[4] B02C *23/24*

U.S. Cl. 241—57 **10 Claims**



1. In a roller mill having at least one milling stage, said milling stage comprising a circular milling path, a plurality of rollers supported to roll along and upon said circular milling path, a feeding device for feeding the material to be crushed into said mill, a distribution device for evenly distributing said material along the circumference of said milling path and for continuously introducing it into the milling path substantially

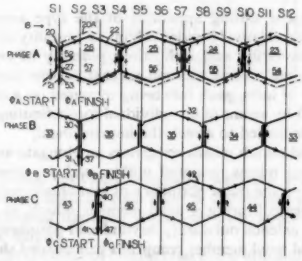
in a direction parallel to the axis of the rollers and an air current generation means, the improvement comprising air guiding wall means facing said milling path and extending parallel thereto to form an air gap in between for guiding said air current transversely over said milling path, said wall means comprising openings through which said rollers project into said gap and said milling path being arranged to release said material after its having been subjected to the action of a roller.

4,541,575

WINDING TECHNIQUE FOR MULTIPLE WINDING BRUSHLESS MOTORS

Ray Dickerson, Christiansburg, Va., assignor to Kollmorgen Technologies Corp., Dallas, Tex.

Filed Sep. 14, 1982, Ser. No. 417,939
Int. Cl.⁴ F16C *9/06;* **H02K** *23/00*
U.S. Cl. 242—703 **5 Claims**



1. A method of winding a multiple phase, multiple winding brushless machine comprising winding one turn of each of a plurality of phase windings before a subsequent turn is wound on any of said plurality of phase windings, and repeating said winding step for each subsequent turn of each of said plurality of phase windings until all turns are wound for all the phases.

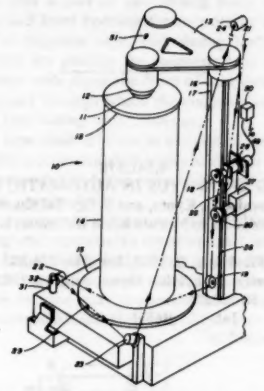
4,541,576

AUTOMATIC TAIL FORMING APPARATUS AND METHOD

Harold G. Sachleben, Bellmawr, N.J.; David W. Hubbard, Richmond, Va.; Richard A. Botset, Chester, Va., and Thomas B. Hardage, Richmond, Va., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Apr. 8, 1983, Ser. No. 483,311
Int. Cl.⁴ B65H *54/02*
U.S. Cl. 242—18 PW **3 Claims**

1. In a method for starting a running length of yarn to wind at a given point on a flanged bobbin during yarn stringup of a vertical spindle winder so as to form a transfer tail of yarn, said winder comprising a flanged bobbin, a thrustable string-up aid, a pin at the outer edge of the outer face of the flange of said bobbin, and a vertically movable yarn guide which, during operation of said winder, oscillates for the full traverse of the winding yarn and determines the position of the yarn winding on the bobbin, said thrustable string-up aid being movable from an inoperative tail forming position to an operative tail forming position, said method comprising engaging said yarn with said movable yarn guide and said string-up aid in an inoperative tail forming position and, with said winder in operation, moving said string-up aid to an operative tail forming position, thereby bringing said yarn into contact with said pin to bring about winding of the yarn on the bobbin, the improvement comprising sensing the presence of said movable yarn guide at a predetermined location and moving said string-up aid to said operative tail forming position when said movable yarn guide is at



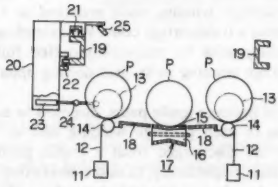
said predetermined location, thereby causing said yarn to begin winding at said given point.

4,541,577

METHOD OF TRANSFERRING YARN PACKAGES IN A SPINNING FRAME

Osamu Suzuki, Obu; Takayuki Morita, Kariya; Shigeru Muramatsu, Okazaki, and Isao Asai, Toyoda, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Jan. 18, 1984, Ser. No. 571,858
Claims priority, application Japan, Jan. 25, 1983, 58-10773; Jan. 26, 1983, 58-10951
Int. Cl.⁴ B65H *54/26, 67/06*
U.S. Cl. 242—35.5 A **6 Claims**



1. A method of transferring yarn packages in a textile machine having a plurality of working stations arranged in a row on each longitudinal side of the machine, a signle run of a normally-moving, endless-type conveyor disposed along the longitudinal center of the machine and a doffing unit for providing doffing of a yarn package at each of the working stations while traveling therearound, said method comprising the steps of:

stopping the doffing unit at a working station which provides a signal calling for doffing of itsd full package;

detecting any package which, if any, has been doffed from any other working station and would then be present on the conveyor at a doffing position corresponding to said working station;

interrupting the conveyor movement and then doffing said full package to said doffing position if no doffed package is detected in said detecting step; but continuing the movement of said conveyor if any doffed package is detected in said detecting step, unitl the doffing position becomes clear of any doffed package, interrupting the conveyor

movement when the doffing position becomes clear during the continued movement of the conveyor, and then doffing said full package to said doffing position on the conveyor.

4,541,578

DOFFING APPARATUS IN AUTOMATIC WINDER

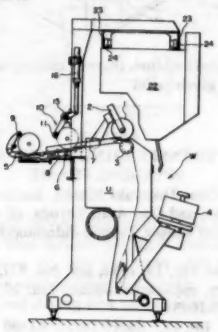
Tsukasa Kawarabashi, Kyoto, and Shinji Takahashi, Joyo, both of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Aug. 8, 1983, Ser. No. 521,383

Claims priority, application Japan, Aug. 11, 1982, 57-140448; Jul. 19, 1983, 58-131526

Int. Cl.⁴ B65H *54/20, 67/06*

U.S. Cl. 242—35.5 A **6 Claims**



1. A doffing apparatus in an automatic winder having a plurality of package winding units arranged in a row, said winder including a transporting conveyor extending along the package winding units for conveying doffed full packages from the package winding units, said doffing apparatus comprising:

a plurality of package guide paths, disposed to extend from a position of each package winding unit at which full packages are discharged from a cradle portion of the winding unit, respectively, to said transporting conveyor, each of said package guide paths being formed of a bottom plate and a side plate such that each is sufficiently inclined downwardly toward said transporting conveyor to enable a doffed full package to roll along its package guide path under gravity;

a stocking device, pivotably disposed from a frame of said automatic winder so as to be capable of pivoting between a first pivotal position and a second pivotal position, said first pivotal position being adpated with respect to each of said plurality of package guide paths so as to be capable of simultaneously stopping full packages substantially midway of the extents of said package guide paths, said said second pivotal position being adapted with respect to each of said plurality of package guide paths so as to simultaneously enable packages to proceed along each of said plurality of package guide paths to said transporting conveyor; and

means for periodically pivoting said stocking device, in response to a timing circuit, from said first pivotal position to said second pivotal position, and the reverse.

4,541,579

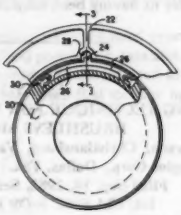
SLITTER, WIND-UP CLUTCH ASSEMBLIES

James W. Essary, and Robert A. Sanderson, both of Graham, Tex., assignors to Graham Magnetics Incorporated, North Richland Hills, Tex.

Filed Sep. 29, 1982, Ser. No. 427,564

Int. Cl.⁴ B65H *19/04*

U.S. Cl. 242—56.2 **14 Claims**



1. In precision slitting apparatus of the type comprising means to feed a relatively wide web into a plurality of slitting means for converting said web into a plurality of relatively narrow webs, and means to wind up said narrow webs on a large number of hubs, each hub being mounted on a common rotatable shaft by means of an individual torquelimiting clutch means each dedicated to a reel, the improvement;

wherein said clutch means comprises an elongate and resilient spring means mounted within, and proximate to a segment of, the outer periphery of said clutch means said spring means bearing a pawl member which, in normal position, extends outwardly beyond said periphery;

wherein said pawl member comprises cam-shaped shoulders on two opposite sides thereof that are substantially parallel to the direction of rotation of said shaft, said shoulders forming wedges to aid depressing of said pawl from its normal position into a position retracted with respect to an inner circumferential wall of a reel in response to forces exerted on said pawl by hubs being pushed onto or over said clutch means in a direction parallel to the axis of rotation of;

wherein said pawl member comprises a bearing surface on at least one side of said pawl which is normal to the direction of rotation; said bearing surface forming means to engage a slot in said hub when said pawl is in said normal position;

and wherein said apparatus also comprises, mounted circumferentially around the housing of said clutch means and extending therefrom on each side of said pawl, resilient support rings which forms both (a) means to stabilize the position of said reel on said clutch and (b) means to allow release of said reel from said common shaft in response to the pulling action on said common shaft.

4,541,580

AUTOMATIC LOCKING RETRACTOR

Katsuyasu Ono, Fujisawa, Japan, assignor to NSK-Warner K.K., Japan

Filed Nov. 10, 1983, Ser. No. 550,579

Claims priority, application Japan, Dec. 1, 1982, 57-182185[U]

The portion of the term of this patent subsequent to Feb. 12, 2002, has been disclaimed.

Int. Cl.⁴ A62B *35/00;* **B65H** *75/48*

U.S. Cl. 242—107.4 D **12 Claims**

1. An automatic locking retractor comprising:

a casing;

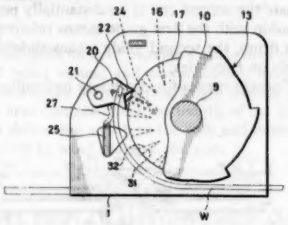
a take-up spindle rotatably supported on the casing and urged in the winding direction of a webbing;

a cog wheel mounted integrally on the take-up spindle;

a latch gear fixed to, and integrally rotatable with, the cog wheel;

a lock lever displaceable between a first position where the lock lever is in engagement with the cog wheel and a second position where the lock lever permits free rotation of the cog wheel, said lock lever being biased toward the first position;

a control member normally biased to a position, where the control member is engageable with the latch gear, and capable of assuming a first working position where the control member is brought into contact with the path of rotation of the circumference of the latch gear by a rotation of the take-up spindle in the pulling-out direction of the webbing and a second working position where the control member is brought into contact with the path of rotation of the circumference of the latch gear by a rotation of the take-up spindle in the winding direction of the webbing, and



sensor means provided integrally with the lock lever and adapted to hold the lock lever in the second position when the webbing has been wound up over at least a predetermined length;

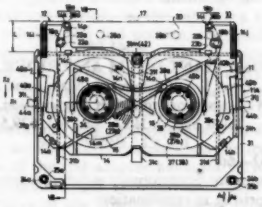
wherein the control member has a first arm and a second arm engageable with the lock lever, the second arm serving as a control portion capable of holding the lock lever in the second position, when the webbing wound up on the take-up spindle over at least the predetermined length has been pulled out and the control member has moved toward the first working position, and permitting free movement of the lock lever toward the first position when the control member has moved toward the second working position.

4,541,581

DUSTTIGHT TAPE CASSETTE

Mitsuhiko Hara, Kawasaki, Japan, assignor to Victor Company of Japan, Ltd., Japan

Filed Jan. 23, 1985, Ser. No. 693,790
Int. Cl.[4] G03B *1/04;* G11B *15/32*
U.S. Cl. 242—198 **8 Claims**



1. A tape cassette comprising:

a cassette case comprising a main cassette body having a front opening at the front thereof and a lid rotatably mounted on said main cassette body for normally covering said front opening, said main cassette body comprising a top plate, a bottom plate, a rear plate, and right and left side plates, said top and bottom plates each having a linear front edge at said front opening and having no cutout part at said front opening; and

a sliding body slidably provided within said main cassette body so that a part of said sliding body is extractable through said front opening for supporting a pair of tape rolls of a magnetic tape, said sliding body comprising guide parts for guiding the magnetic tape between said pair of tape rolls along the front of said sliding body and a cutout part through which the magnetic tape along said front of said sliding body traverses,

when said tape cassette is not in use said sliding body being completely accommodated within said main cassette body and said cutout part being covered by the bottom plate of said main cassette body,

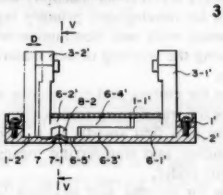
when said tape cassette is in use and is loaded into a magnetic recording and reproducing apparatus said lid opening and a part of said sliding body being extracted through said front opening so that said cutout part is exposed outside said main cassette body to permit tape draw-out means of said apparatus to enter into said cutout part.

4,541,582

ROLLED PAPER HOLDER

Kazuyoshi Odagawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 29, 1982, Ser. No. 444,973
Claims priority, application Japan, Dec. 11, 1981, 56-198370
Int. Cl.[4] B65H *19/00*
U.S. Cl. 242—55.2 **3 Claims**



1. A rolled paper holder comprising:

a base having one of two mutually engageable means;

first rolled paper holding means rotatably supported by said base; and

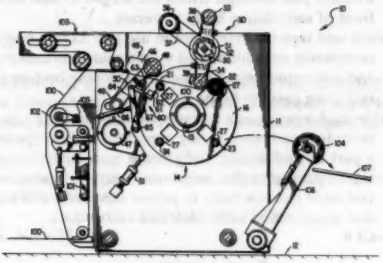
second rolled paper holding means movable toward said first rolled paper holding means and supported by said base to allow rotational movement in a direction substantially perpendicular to the direction of movement toward said first rolled paper holding means, said second rolled paper holding means having the other of said mutually engageable means for stopping said second rolled paper holding means at a predetermined position in the direction of movement toward said first rolled paper holding means and at a predetermined rotational position in its rotational direction, said other mutually engageable means being resiliently engaged with said one mutually engageable means when said second rolled paper holding means is moved toward said first rolled paper holding means, said second rolled paper holding means cooperating with said first rolled paper holding means to rotatably hold a rolled paper said mutually engageable means engage with each other at a plurality of rotating positions of said second rolled paper holding means.

4,541,583

CONTINUOUS LAYON ROLLER FILM WINDER

Edward W. Forman, Palmyra, and Mark F. Kozlowski, Pittsford, both of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 9, 1985, Ser. No. 690,082
Int. Cl.[4] B65H *19/26, 19/06*
U.S. Cl. 242—56 A **11 Claims**



1. A winder apparatus for winding individual rolls of sheet material from a continuous web of said material, said apparatus comprising:

a frame;

a turret rotatably mounted in said frame;

a plurality of spindles carried by said turret, each of said spindles adapted to sequentially wind an individual roll of said sheet material;

means in said frame adapted to feed said continuous web of said material onto a first of said plurality of spindles; at a roll build-up position;

a primary layon roller assembly mounted in said frame;

means for moving said primary layon roller assembly into contact with said continuous web on said first spindle during the winding of said material on and said first spindle;

means for cutting said continuous web of said material;

means for transferring said continuous web of said material from said first spindle to a second of said plurality of spindles, said transferring means including an auxillary layon roller;

means for moving said auxillary layon roller into contact with said continuous web on said second spindle during said transfer of said continuous web to said second spindle;

means for indexing said turret to change the relative positions of said plurality of spindles whereby said second spindle is moved toward the roll build-up position previously occupied by said first spindle and moving said first spindle toward a unloading position;

means for moving said auxillary layon roller to maintain said auxillary layon roller in contact with said second spindle during at least the initial rotation of said turret;

means for moving said primary layon roller from contact with said first spindle and into contact with said second spindle during said indexing of said turret; and

means for retracting said auxillary layon roller out of contact with said second spindle.

4,541,584

CABLE WINDING APPARATUS

Theodore Rivinius, 810 N. 2nd St., #9, Bismarck, N. Dak. 58501

Continuation-in-part of Ser. No. 516,803, Jul. 25, 1983, Pat. No. 4,493,463. This application Jan. 9, 1985, Ser. No. 689,824
Int. Cl.[4] B65H *54/28*
U.S. Cl. 242—158 R **12 Claims**

1. An apparatus for guiding a cable in a substantially uniform manner on a rotatable drum, the apparatus being mounted on a base proximate the drum and the drum having a central axis and first and second spaced apart ends, the apparatus comprising:

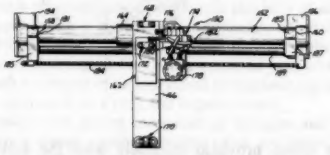
a longitudinal stationary guide mounted to the base substantially parallel to the axis of the drum;

a guide support member having first and second ends, the first end being disposed closer to such drum than the second end and the guide support member being slidably attached to the longitudinal guide for travel substantially parallel to the axis of the drum;

first guide means for guiding a cable controlled by such drum, the first guide means being attached to the guide support member proximate the first end and being configured to permit the cable to move a limited distance in the transverse direction;

second guide means for guiding the cable, the second guide means being positioned on the guide support member proximate the second end in a substantially perpendicular relationship with the first guide means relative to the axis of such drum, the second guide means slidably engaging the cable on two sides;

hydraulic power means for providing hydraulic fluid;



actuator means fluidly connected to the hydraulic power means for moving the guide support member along the longitudinal guide including a hydraulic motor operably connected to the valve means and mounted on the guide support member and selectively operable in a first and second direction and further including a sprocket drivably connected to the hydraulic motor and a stationary chain extending the width of the drum and the sprocket engaging the chain;

hydraulic valve means for directing the flow of hydraulic fluid from the power means to the actuator means; and

cable controlled means for actuating the hydraulic valve means movably mounted on the guide support member and normally engaging the cable extending from such drum, the cable controlled means for actuating being operably connected to the hydraulic valve means such that transverse movement of the cable moves the cable controlled means for actuating and activates the hydraulic valve means to direct flow to the actuator means so that the actuator means moves the guide support member in either a first or second transverse direction corresponding to the transverse movement of the cable by the sprocket engaging the chain.

4,541,585

COMPLIANT DRUM AND RIDER ROLL

Kenneth G. Frye, South Egremont, Mass., and Michael L. Gill, Beloit, Wis., assignors to Beloit Corporation, Beloit, Wis.

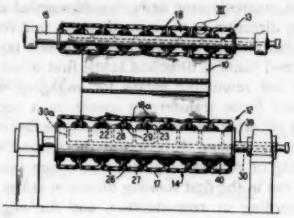
Filed Sep. 6, 1983, Ser. No. 529,512
Int. Cl.[4] B65H *17/08*
U.S. Cl. 242—66 **25 Claims**

2. A winder for continuously winding a traveling web onto a roll comprising in combination:

first and second parallel horizontal drums defining a winding nest therebetween for supporting a rotating roll being wound;

at least one of said drums having a circumferential outer surface layer formed of an elastomeric material having substantially nonextensible cords embedded in the material with the circumference of the drum remaining constant due to the nonextensibility of the cords;

said drum including an inflatable fluid chamber; the outer surface layer surrounding said inflatable fluid chamber to provide a resilient backing for the surface layer in its support of the roll;



said material deforming to provide surface area contact with the roll being wound and accomodating irregularities in the surface of the roll along the length thereof maintaining surface area contact along the length of the roll;

means for delivering a web to the roll; and means for rotating the roll to wind the web thereon.

4,541,586

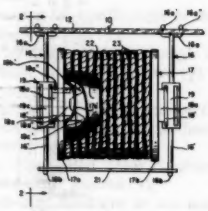
ROPE REEL DISPLAY AND DISPENSER ASSEMBLY FOR PERFORATED PANEL BOARDS

Byron A. Crowe, c/o Crowe Rope Company, Warren, Me. 04864

Filed Jan. 17, 1984, Ser. No. 571,438

Int. Cl.⁴ B65H *49/00*; D01H *7/16*

U.S. Cl. 242—129.5 **3 Claims**



1. In a perforated panel board assembly, a panel board having spaced laterally-aligned peg holes therein, rod type brackets having spaced turned up legs hooked in said board peg holes and projecting forwardly from the panel board, each of said brackets having a horizontally—extending round rod portion, a rod adapter for each bracket having depending spring leg portions spaced apart and noramally converging upon one another to provide a middle attaching slot for receiving the horizontal rod portion in the mounting of the rod adapter upon the horizontal rod portion, the spacing of the adapter leg portions being slightly less that the diameter of the round rod portion so as to grip the rod portion and frictionally retain the adapter upon the rod portion of the bracket against free lateral and rotational displacement thereon and yet permitting restrained lateral and rotational adjustment for the affixing of other parts to the rod adapter while upon the rod bracket, each leg portion of the rod adapter having a vertically—extending attaching groove open at its top and closed at its bottom, and the groove of one adapter opposing groove of another adapter when the adapters are axially—aligned with one another in their spaced portions with their bracket upon the panel board, a rope or linear product reel having an end member with a central opening therein at end of the reel, a reel or spool adapter having a shank portion thrust into the central opening of each reel end member and a flanged head portion, the said head portions of reel adapters being accommodated within the opposing grooves of frictionally adjustable axially—aligned rod adapters from through their top openings, said reel end members being rotatable upon the shank portions of their reel brackets to permit free linear dispensing of the rope or like contents of the reel or spool, whereby one reel and its adapters can be individually lifted from the their axially—aligned reels without disassembling of the other reels from the row of axially-aligned reels so carried upon the panel board.

4,541,587

HUB FOR MAGNETIC TAPE CASSETTES, ESPECIALLY COMPACT CASSETTES, AND MAGNETIC TAPE CASSETTE POSSESSING ONE OR MORE SUCH HUBS

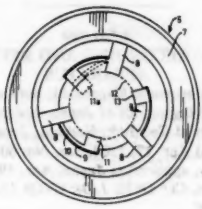
Werner Stumpfl, Ludwigshafen; Günter Bettinger, Schifferstadt; Friedrich Engel, Frankenthal; Horst Fitterer, Mannheim; Norbert Kreimes, Ludwigshafen; Dietmar Pfefferkorn, Hemsbach; Norbert Schäffer, Deidesheim, and Kurt Schmidts, Kehl, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Division of Ser. No. 316,072, Oct. 28, 1981,. This application Apr. 12, 1984, Ser. No. 599,525

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1980, 8028933[U]; Feb. 19, 1981, 8104557[U]; Feb. 19, 1981, 8104556[U]

Int. Cl.⁴ G03B *1/04*; G11B *15/32*

U.S. Cl. 242—197 **11 Claims**



1. A flangeless hub for magnetic tape cassette, especially for compact cassettes, for use with a transport apparatus having a drive spindle provided with projecting keys, said hub being arranged for displacement in said cassette in at least the radial direction, and, on its inner periphery having teeth for driving engagement with said projecting keys on the drive spindle,

wherein the hub comprises an inner part having said teeth on its inner periphery, and a separate outer part having a winding surface for said magnetic tape, and means for coupling said inner part to said outer part for torque transmission in such a manner that there is at least radial play between said parts after coupling, so that tolerances affecting the driving relationship between the transport apparatus and the cassette are at least partially absorbed by the play between said two parts and hence displacement of said outer part relatively to the cassette in operation is minimized.

4,541,588

RECORDING TAPE CARTRIDGE

Akihiko Sato, Nagaokakyo, Japan, assignor to Hitachi Maxell, Ltd., Osaka, Japan

Filed Aug. 26, 1983, Ser. No. 526,525

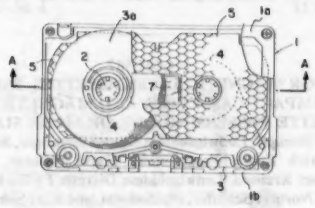
Claims priority, application Japan, Aug. 28, 1982, 57-130110[U]

Int. Cl.⁴ G11B *23/10*

U.S. Cl. 242—199 **9 Claims**

1. A recording tape cartridge complex which comprises a recording tape cartridge having a upper and lower wall member, each with an inner surface, a recording tape with respective edges would in a roll on each of a pair of hubs provided on at least one of said upper and lower wall members of said tape

cartridge and at least one slip sheet comprising apertures corresponding to said hubs laid on at least one of said inner surfaces of at least one of said wall members of said cartridge to elastically support said roll of the recording tape, said at least one slip sheet comprising a plurality of rib units, each of said rib units being composed of a plurality of ribs which project from said slip sheet to form a hexagonal configuration in plan view



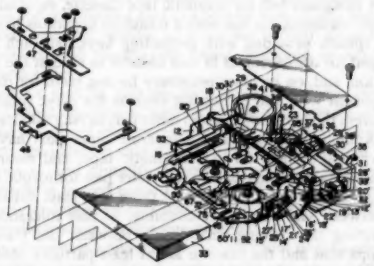
with said rib units linked in both longitudinal and widthwise directions over the entire surface of said slip sheet in such a manner that one side of said hexagonal configuration of said respective rib units forms a common side with an adjoining hexagonal rib unit so as to form a multiplicity of irregular lines corresponding to said common-adjoining sides of said rib units extending from respective ends of said slip sheet.

4,541,589

MAGNETIC RECORDING AND REPRODUCING APPARATUS

Manabu Sugai; Yasuyoshi Kagohashi, both of Yokohama, and Hiroshi Aoki, Nagano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Apr. 17, 1984, Ser. No. 601,225
Claims priority, application Japan, Apr. 19, 1983, 58-69421
Int. Cl.[4] G03B *1/04*; G11B *15/32*
U.S. Cl. 242—200 **15 Claims**



1. A magnetic tape transport apparatus comprising:

a motor;

first and second reel driving means adapted to respectively engage first and second reels in a cassette half;

first rotational force transferring means for transferring a rotational force of the motor to said first or second reel driving means, thereby allowing a magnetic tape in said cassette half to be run at a first speed;

running direction switching means for controlling said first rotational force transferring means, thereby switching the running direction of said magnetic tape;

second rotational force transferring means for transferring the rotational force of said motor to said first or second reel driving means, thereby allowing said magnetic tape to be run at a second speed faster than said first speed;

exclusive fast forwarding means for engaging said second rotational force transferring means in a first state, thereby allowing said magnetic tape to be fast forwarded in a first running direction at the second speed, in a recording or reproducing mode in which said magnetic tape is run in the first running direction at the first speed for recording or reproduction, and for engaging said second rotational force transferring means in a second state, thereby allowing said magnetic tape to be fast forwarded in a second running direction at the second speed, in a recording or reproducing mode in which said magnetic tape is run in the second running direction at the first speed; and

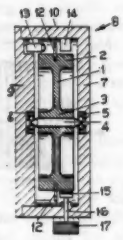
exclusive fast rewinding means for engaging said second rotational force transferring means in a second state, thereby allowing said magnetic tape to be fast rewinded in the second running direction at the second speed, in a recording or reproducing mode in which said magnetic tape is run in the first running direction at the first speed for recording or reproduction, and for engaging said second rotational force transferring means in a first state, thereby allowing said magnetic tape to be fast rewinded in the first running direction at the second speed, in a recording or reproducing mode in which said magnetic tape is run in the second running direction at the first speed for recording or reproduction.

4,541,590

ROLL MEASURING DEVICE

James O. Bolton, Hillbank, Australia, assignor to The Commonwealth of Australia, Canberra, Australia

Filed Jul. 20, 1982, Ser. No. 400,086
Claims priority, application Australia, Jul. 24, 1981, PE9910
Int. Cl.[4] F41G *7/00*
U.S. Cl. 244—3.2 **3 Claims**



1. A roll measuring device for a missile released from an aircraft with relatively small velocity variation from that of the aircraft, comprising

(a) a case non-rotationally secured to the missile about the missile flight axis,

(b) an undriven inertia member in the said case, shaped so that its mass is balanced about a shaft extending along the said axis to be rotationally uninfluenced by gravity or movement medial or angular to the said axis,

(c) a first low-friction bearing on a first side of the said inertia member supporting one end portion of the said shaft from the said case,

(d) a second low-friction bearing on the other side of the said inertia member supporting the other end portion of the said shaft from the said case,

(e) means to measure rotation of the said case about the said inertia member when the said missile is released from the aircraft whereby correction of the roll of the said missile about is flight axis can be controlled,

(f) a brake between the said inertia member and the said case, and

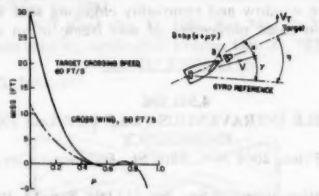
(g) means to release the brake when the said missile is released from the said aircraft.

4,541,591

GUIDANCE LAW TO IMPROVE THE ACCURACY OF TACTICAL MISSILES

William R. Chadwick, Fredericksburg, and Conrad M. Rose, Dahlgren, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 1, 1983, Ser. No. 481,213
Int. Cl.⁴ F41G *7/22*
U.S. Cl. 244—3.15 **10 Claims**



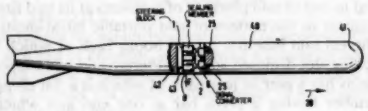
1. A missile guidance system for controlling a missile with canards to strike a target comprising:
a missile longitudinal body axis;
an inertial-space-fixed reference line;
an angle, eta (η) defined as an angle between the inertial-space-fixed reference line and the missile longitudinal body axis;
means to measure the angle eta (η)
a missile velocity-vector representing the direction of the velocity of the missile;
a missile angle of attack alpha (α) defined as an angle between the missile velocity vector and the missile longitudinal body axis;
means for measuring the missile angle of attack (α); a missile flight path angle gamma (γ);
means to subtract angle eta (η) and angle alpha (α) to form the missile flight path angle gamma (γ);
a missile to target line-of-sight;
means to measure a pursuit angle epsilon (ξ); defined as the angle between the missile to target line-of-sight and the missile velocity vector;
means to form a weighted linear combination R of angle epsilon (ξ) and angle gamma (γ);
a control means that functions to automatically move the canards to direct the missile to the target according to the weighted linear combination of epsilon (ξ) and gamma (γ); and
means to feed the weighted linear combination of epsilon (ξ) and gamma (γ) to the control means.

4,541,592

WING-STABILIZED PROJECTILE

Manfred Moll, Duesseldorf, Fed. Rep. of Germany, assignor to Rheinmetall GmbH., Duesseldorf, Fed. Rep. of Germany

Filed Nov. 10, 1982, Ser. No. 440,631
Claims priority, application Fed. Rep. of Germany, Nov. 10, 1981, 3144532
Int. Cl.⁴ F41G *7/00*; F42B *15/02*
U.S. Cl. 244—3.22 **14 Claims**



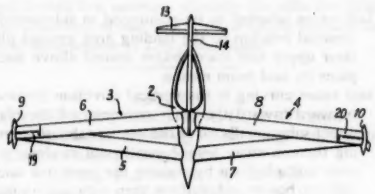
1. An improved autonomous steering system for a fin-stabilized projectile having a gas generator which emits gases for steering the projectile by means of gas thrusts transversely with respect to the longitudinal axis of the projectile, and including a steering block having at least a pair of parallel bores in each of which a sealing member is slidably movably mounted, a first one of said sealing members being operatively connected to an electrically actuated signal converter means, and a nozzle for emitting a transverse thrust with respect to the longitudinal axis of the projectile being in fluid communication with the bore in which said first one of said sealing member is slidably mounted, the improvement comprising said bore with which said nozzle is in fluid communication and in which said first one sealing member is slidably mounted is disposed parallel to the longitudinal axis of said projectile in said steering block and is connected to said signal converter means via a separate signal carrier, whereas said bore in which the other second sealing member is slidably movably mounted is in fluid communication with said gas generator via a first gas conduit and includes a gas draw-off passage and is coaxially disposed with respect to the longitudinal axis of the projectile.

4,541,593

AIRCRAFT PROVIDING WITH A LIFT STRUCTURE INCORPORATING MULTIPLE SUPERPOSED WINGS

Lucien Cabrol, 12 rue des Carmes, 13200 Arles, France

Filed Mar. 1, 1983, Ser. No. 471,059
Claims priority, application France, Mar. 9, 1982, 82 03961
Int. Cl.⁴ B64C *39/08, 39/12*
U.S. Cl. 244—45 R **5 Claims**



1. An aircraft, comprising in combination:
a fuselage having two sides;
including on each said side of said fuselage at least one lift structure constituted by at least an upper wing and a lower wing, each said wing being connected at one end thereof to the fuselage and at the other end to at least one wing element, such that each lift structure forms in front elevation with the side of the fuselage a closed polygon;
each said wing being hingedly secured to said fuselage and to a portion of said element so as to form a semi-rigid embedding, allowing small rotations of each wing in a vertical plane containing the median line of each respective said wing; and
each of said upper and said lower wings being of such structure that the values of the moment of inertia, varying as a function of the longitudinal distance, take a maximum value at a generally central zone of each of said upper and said lower wings.

4,541,594

TAKEOFF AND LANDING PLATFORM FOR V/STOL AIRPLANE

William H. Foley, Arlington, Tex., assignor to General Dynamics Corporation, Fort Worth, Tex.

Continuation of Ser. No. 218,983, Dec. 22, 1980, abandoned. This application Jan. 24, 1983, Ser. No. 460,599
Int. Cl.⁴ B64F *1/00*
U.S. Cl. 244—114 B **11 Claims**

1. A take-off and landing platform means for supporting a powered V/STOL type airplane thereon above a ground plane in any azimuth position and effective for all such positions to direct airplane engine exhaust gases away from the airplane so

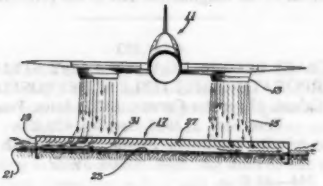
as to prevent formation and rising of a fountain jet of exhaust gas beneath the airplane comprising:

a substantially unitary, horizontal support platform sized and adapted to support a powered V/STOL type airplane thereon in any azimuth position during landing, takeoff and when at rest;

support beam means for spacing the platform at a predetermined height above the ground plane for supporting the weight of a said V/STOL type airplane and said platform;

said platform comprising a gas flow directing floor portion of spaced-apart exhaust gas deflecting vanes connecting between and supported at their end portions by said support beam means;

said vanes fixedly arranged in a substantially horizontal plane and extending over substantially the entire area of said platform;



said vanes adapted to be positioned in substantially unobstructed relation to the landing area ground plane with their upper and lower edges spaced above said ground plane by said beam means;

said vanes curving in the vertical direction downward and outward toward the outer perimeter of the platform to direct substantially all of the engine exhaust gases impinging thereon away from beneath said airplane positioned over said platform by passing the gases via said curved vanes to below said platform then outward in substantially unobstructed flow beneath the flow directing vanes beyond the platform perimeter; and

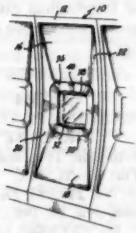
a horizontal open-work reticulated grid means overlying said vanes for walking thereon.

4,541,595

REMOVABLE INTERIOR WINDOW UNIT FOR AIRCRAFT

Peter E. Fiala, Federal Way; Gerald E. Davis, Black Diamond; Alan J. Tuma, Edmonds, and Jack E. Hart, Bellevue, all of Wash., assignors to Heath-Tecna Precision Structures, Kent, Wash.

Filed Mar. 28, 1983, Ser. No. 479,674
Int. Cl.⁴ B64C *1/14*
U.S. Cl. 244—129.3 **11 Claims**



1. In an aircraft having a pressure window mounted in the hull, an interior window assembly comprising

an interior wall panel mounted within the aircraft, and spaced from said hull, said interior wall panel having a window opening formed therein in register with said pressure window, the portions of said wall panel surrounding said window opening being biased in an inboard direction;

a rigid windowpane mounted in a frame, said frame being of substantially the same size as said window opening;

a first flange extending from an inboard end of said frame, said first flange being of a dimension larger than the window opening such that portions of said wall surrounding said window opening abut said first flange; and,

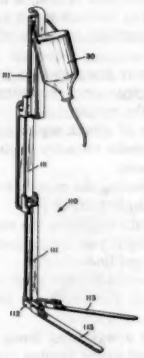
frame constraint means affixed to said hull adjacent said pressure window and removably engaging said window frame to resist movement of said frame in an inboard direction.

4,541,596

PORTABLE INTRAVENOUS POLE FOR USE IN AN EMERGENCY

Ronald K. Price, 2004 NW. 48th St., Oklahoma City, Okla. 73118

Continuation-in-part of Ser. No. 417,094, Sep. 13, 1982, abandoned. This application Mar. 23, 1984, Ser. No. 592,858
Int. Cl.⁴ A47B *97/00*
U.S. Cl. 248—125 **4 Claims**



1. A portable intravenous pole for use in combination with a surface on which an emergency victim is lying and the weight of the mergency victim's body to support a intravenous solution delivery system including a container in which an intravenous solution is disposed, tubing fluidly coupled to the container, and a fluid input device fluidly coupled to the tubing for insertion into a vein of the emergency victim, said portable intravenous pole comprising:

a. a plurality of segments each of which is an elongated member having a first end and a second end wherein said first end of one of said plurality of segments may be mschanically coupled to said second end of another of said plurality of segments;

b. mounting means for mounting the container to said first end of one of said plurality of segments;

c. a base which is disposed perpendicular and fixedly coupled to one of said plurality of segments at its said first end adjacent to the bottom of said portable intravenous pole wherein said base has pair of hooks each of which has a locking slot disposed adjacent thereto and said supporting means has a pair of legs each of which is a flat elongated member having a pivot bar at one end and which are mechanically coupled to said base whereby said pivot bar of each of said pair of legs is rotatively coupled to one of said hooks and is slidably inserted into one of said locking slots thereby fixedly, but detechably, coupling each of said pair of legs to said base; and

d. supporting means for supporting said base and said plurality of segments in a substantially vertical position whereby

the container is disposed above the body of the emergency victim, said supporting means being mechanically coupled to said base so that said supporting means may be placed between the surface on which the emergency victim is lying and the body of the emregency victim.

4,541,597

ADJUSTABLE SELF-SUPPORT STAND

Robert Davanture, 7, rue Clos Savaron, 69004 Lyon, France

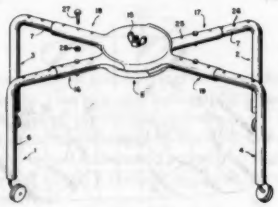
PCT No. PCT/FR80/00152, § 371 Date Jun. 10, 1981, § 102(e) Date Jun. 10, 1981, PCT Pub. No. WO81/01321, PCT Pub. Date May 14, 1981

PCT Filed Oct. 21, 1980, Ser. No. 276,345

Claims priority, application France, Oct. 31, 1979, 79 27514

Int. Cl.⁴ F16M *11/38*

U.S. Cl. 248—167 **12 Claims**



1. An adjustable support stand comprising:

(a) four legs, each of said legs being formed in a generally L-shaped right angle configuration which includes a substantially horizontal arm portion and a substantially vertical, upright portion; and

(b) assembly means for connecting said substantially horizontal arm portions of said legs in diametrically opposed pairs, said assembly means comprising four shell members journaled about a tightening member, each of said shell members comprising two-half sleeves and a hollowed cylindrical skirt, each of said members further comprising means for retaining one of said horizontal arm portions, said assembly means further comprising first adjustment means for angularly adjusting said legs about a vertical axis and second adjustment means for adjusting the distance between legs comprising each diametrically opposed pair, said legs together defining a polygonal support surface for an article which can be adjusted as a function of the dimensions of an object to be supported, each of said diametrically opposed pairs of legs adapted to be adjusted over a maximum amplitude between one position in which said pairs are arranged perpendicularly and another position in which said pairs are arranged substantially parallel.

4,541,598

HANGER FOR MOUNTING ITEMS

Jesus R. Villanueva, Justice, and Richard G. Krautsack, Arlington Heights, both of Ill., assignors to The Cooperative Marketing Co., Elk Grove Village, Ill.

Filed Aug. 5, 1983, Ser. No. 520,717

Int. Cl.⁴ G09F *3/18*

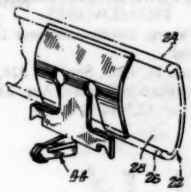
U.S. Cl. 248—221.4 **7 Claims**

1. A hanger for supporting a plurality of generally flat items such as a pad of coupons, each having a mounting hole, to be removed one at a time, said hanger being integral and formed from a generally flat resilient blank made of an organic polymeric resin, said hanger comprising:

a head portion for mounting on a support structure;

a lower portion for carrying said items; and

a stem interconnecting said head portion and said lower portion, said lower portion comprising a pair of oppositely, substantially horizontally, extending arms having adjacent connected ends and remote distal ends, said arms being deflectable from the plane of said blank together side by side to form a shaft, extending substantially perpendicularly to the plane of said blank, for projecting through the mounting holes in said items, the distal end of each arm having one oppositely extending barb-like projection for retaining said items on said shaft, the projection on one arm extending upwardly and the projection on the other arm extending downwardly, each of said arms being



independently resiliently deflectable in a vertical plane when said arms form said shaft, said arms being relatively movable from a first position wherein said projections do not substantially horizontally overlap said arms to a second position wherein said projections do substantially horizontally overlap said arms, said arms being resiliently biased to said first position, whereby the effective height of the distal end of said shaft can be varied without substantial deformation of said projections.

4,541,599

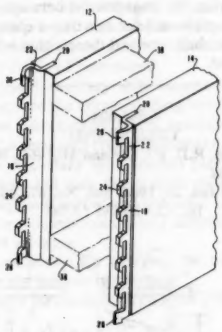
SELF-LOCKING MOUNTING CLIP SYSTEM

Raoul J. P. Schoumaker, Wyoming, Mich., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 19, 1983, Ser. No. 524,809

Int. Cl.⁴ A47F *5/08*; A47G *29/02*

U.S. Cl. 248—222.2 **3 Claims**



1. In combination with a pair of cabinet sidewalls each having a rear edge, a self-locking mounting clip system for use in connection with a pair of laterally spaced, vertically extending slotted standards, said mounting clip system comprising:

first and second mounting clips secured respectively to the rear edge of first and second cabinet sidewalls, said first and second mounting clips having a series of vertically slotted hook-shaped connectors, including upper and lower hook-shaped connectors, extending rearwardly of said cabinet sidewalls with the upper and lower hook-shaped connectors in each series being angled inwardly slightly with respect to the remainder of said series of hook-shaped connectors with the angular relationship

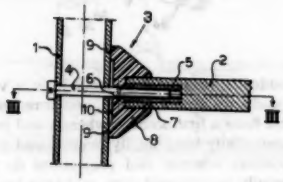
between the ends of the upper and lower hook-shaped connectors and the ends of the remainder of the hook-shaped connectors in said series being such as to allow insertion and removal of said hook-shaped connectors through the slots in the slotted standards only when said cabinet sidewalls are positioned at an angle with respect to said slotted standards.

4,541,600

BRACKET OR SUPPORT, PARTICULARLY FOR SHELF FRAMEWORKS

Dzintars Vieglins, Taberg, Sweden, assignor to Skillmech AB, Skillingaryd, Sweden

Filed Aug. 24, 1983, Ser. No. 526,042
Claims priority, application Sweden, Aug. 31, 1982, 8204962
Int. Cl.⁴ A47B *47/00*
U.S. Cl. 248—239 **1 Claim**



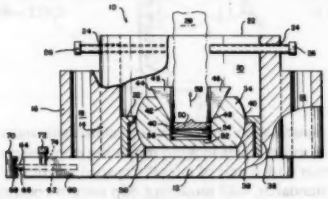
1. A bracket for connecting a shelf with an appurtenant gable or framework, said bracket having a channel for receiving said shelf and a through aperture opening into the bottom of said channel for a screw or bolt to be threaded into one end of said shelf for connecting the shelf with said gable, said bracket having one side which confronts the gable wherein said one side of said bracket is provided with a central recess to define a pair of marginal portions of said side, said side of said bracket and said gable being in engagement with one another, the portion of said side in engagement with said gable being limited to said marginal portions thereof, said bracket being elastic for improving the engagement between said marginal portions and said gable and for exerting a clamping force by said channel on the shelf received therewithin when said screw or bolt is tightened.

4,541,601

TREE STAND

Rocco J. Corbisello, R.D. #7, Cleland Mill Rd., Box 193C, New Castle, Pa. 16102

Filed Jan. 24, 1984, Ser. No. 573,335
Int. Cl.⁴ F16M *13/00*
U.S. Cl. 248—516 **28 Claims**



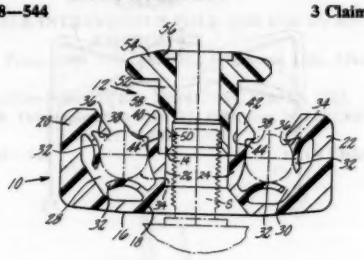
1. A tree stand for supporting a tree comprising:
a support base;
a side wall vertically extending from said support base so as to define an interior area;
a plurality of openings in said side wall which receive means for aligning said tree with said side wall;
a ball element provided substantially interiorly of said side wall and including an opening therein which receives a trunk portion of said tree;
spring means positioned in said ball element opening between a bottom end wall of said opening and an interior bottom wall of a disc element positioned in said opening;
seat means supporting said ball element and adjustably positioning said tree for movement in three directions.

4,541,602

PIPE CLIP

Peter Potzas, Alten-Buseck, Fed. Rep. of Germany, assignor to USM Corporation, Farmington, Conn.

Filed Aug. 19, 1981, Ser. No. 294,334
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1980, 3029975
Int. Cl.⁴ F16M *13/00*
U.S. Cl. 248—544 **3 Claims**



1. A one piece molded plastic pipe clip for securing a pipe in position in the locality of a stud comprising means for retaining the clip on the stud and means for retaining a pair of pipes on the clip characterized in that said means for retaining said pipes on the clip includes a pair of flexible fingers one to embrace a portion of each pipe and said means for retaining the clip on the stud includes a locking portion frangibly connected to said clip having a beveled shoulder provided thereon and disposed adjacent said flexible finger which, after the pipe as been assembled in the clip, is movable from a position in which it allows said fingers to flex for admission of the pipes to said pipe-retaining means, to one in which it forcibly contacts said flexible fingers by engagement of said beveled shoulder with said fingers and thereby both locks said fingers in embracing engagement with the respective pipes and also firmly secures said clip to the stud, said locking portion further having a bore formed therein to receive the stud thread, a portion of said bore which first engages the stud being of slightly larger diameter than an adjacent portion of the bore, so that said locking portion can first be lightly held by the tip of the stud in said larger diameter portion of said bore while the pipe or pipes are assembled on said clip and then driven to its stud securing position forcing said bore over the stud.

4,541,603

SUPPORT ARRANGEMENT FOR AC MOTOR

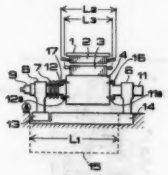
Masahiro Hayashi, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 16, 1984, Ser. No. 610,865
Claims priority, application Japan, May 17, 1983, 58-87851
Int. Cl.⁴ F16M *9/00*
U.S. Cl. 248—679 **4 Claims**

1. An AC motor for driving a rolling mill, comprising:
a stator;
a rotor engaged with said stator and mounted on a rotor spider;
stub shafts extending removably from said rotor spider respectively to a load side and the side opposite to the load side;
a bed for said motor;

a pair of bearing pedestals erected on said bed for supporting both said stub shafts the first of said bearing pedestals being positioned on the load side and the second of said bearing pedestals being positioned on the side opposite the load side;

said bed being divided into a first bed section for supporting said first pedestal and a second bed section for supporting said second pedestal; and



a pit formed below said bed; said bed extending beyond said pit on the load side and terminating substantially at the end of said pit on the side opposite to the load side;

said pit at the end opposite to the load side extending to a position below said second pedestal so that the stator can be moved axially a distance sufficient to expose the rotor for removal.

4,541,604

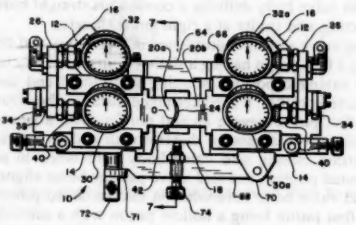
MATRIX BALANCING FIXTURE

Martin A. Herman, 2085 W. 114th St., Cleveland, Ohio 44102

Filed Nov. 25, 1983, Ser. No. 555,161

Int. Cl.⁴ G01B *1/00*

U.S. Cl. 249—33 **5 Claims**



1. A matrix balancing fixture adapted to be attached to and extend between a pair of spaced carrier posts, a cartridge attachable to each of said posts, a top and a bottom template slidably carried on top and bottom surfaces of each of said cartridges and movably in horizontal planes towards each other for engaging a test article;

an open ended box positioned between said cartridges to receive a test article on its open vertical axis with the article extending from the box at its top and bottom for engagement by said templates, the fixture comprising:

an indicator mounting bracket having a pair of diverging arms secured to each of said cartridges at an upper portion thereof;

an indicator having an operating pin slidably mounted therein and extending therefrom individually mounted on each of said arms to provide a first and second said indicator;

a control finger secured to a said top template and engaging the operating pin of said first indicator; and

means including a rotatable member extending vertically of the fixture for connecting said bottom template to a control member of said second indicator whereby said indicators can accurately gauge the position and/or size of a test article engaged by said templates.

4,541,605

METAL MOLD DEVICE

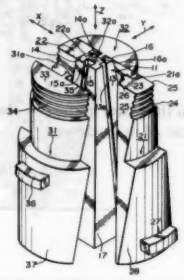
Kazuho Kubota, and Masao Todoroki, both of Tochigi, Japan, assignors to Daiichi-Geyer Kabushiki Kaisha, Japan

Filed Feb. 14, 1984, Ser. No. 579,997

Claims priority, application Japan, Feb. 16, 1983, 58-24385

Int. Cl.⁴ B29F *1/14;* **B29D** *15/00;* **B29C** *7/00*

U.S. Cl. 249—142 **7 Claims**



1. A metal mold device which comprises a female die for providing a profile of a molding, a die frame having a hole and a divisional male die assembly protruded through the hole of the die frame, characterized in that the divisional male die assembly comprises:

a central base having a rectangular top and four side slopes, each opposed pair having common individual gradient angles or a common angle and moving along the axis between a molding position and a removing position;

a pair of opposed primary slide members strictly moved along the axis on the opposed corresponding side slopes of the base respectively and each primary slide member comprising a primary slide contact plane, for contacting said side slopes, a partial convexo-concave sidewall component and a pair of side planes;

a pair of opposed auxiliary slide members loosely moved along the axis on the corresponding remained slide slopes of the base respectively, each auxiliary slide member comprising a remained convexo-concave sidewall component and a secondary slide contact plane for contacting said side plane and slide slopes upon assembling said male die assembly; said partial and remained convexo-concave sidewall components completely defining an inner sidewall of said molding;

central support means for carrying the base and threadly secured on the bottom of the base;

primary support means for carrying the primary slide members; and

auxiliary support means for carrying the auxiliary slide members.

4,541,606

RAM-TYPE BLOWOUT PREVENTER

Leonard E. Williams, Jr., Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Filed Nov. 4, 1982, Ser. No. 439,195

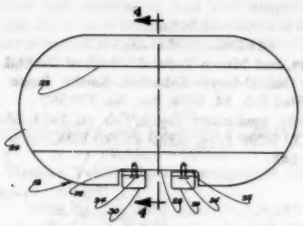
Int. Cl.⁴ E21B *33/06*

U.S. Cl. 251—1.3 **22 Claims**

11. An improved ram structure for use in a ram-type blowout preventer having a central bore and guideways extending therefrom comprising

a ram body having a transverse shape conforming to the shape of its guideway, a lower surface, a front recess for

receiving front packing and means for connecting to an actuator, and



means on the lower surface of the ram body to compensate for wear of its guideway.

4,541,607

HIGH-PRESSURE BALL VALVE

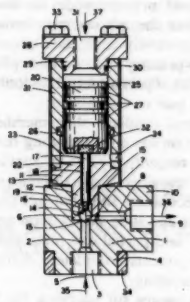
Karl Hotger, Bochum, Fed. Rep. of Germany, assignor to Gebr. Eickhoff Maschinenfabrik und Eisengiesserei m.b.H., Bochum, Fed. Rep. of Germany

Filed Oct. 1, 1984, Ser. No. 656,318

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1983, 3336345

Int. Cl.⁴ F16K *31/122*

U.S. Cl. 251—63.4 **6 Claims**



1. A high-pressure ball valve comprising the combination of a valve housing having a valve bore formed with an outlet bore at the periphery thereof, said valve bore extending to an inlet bore having a seat surface facing said valve bore, a valve member including a cylindrical extension extending from a tapered and substantially frusto-conical end face, said cylindrical extension having a length to sealingly engage in said valve bore and extend to the outlet bore at the periphery thereof, said cylindrical extension further having a central bore extending to an enlarged pocket within the extended end thereof, a ball to sealingly fit in said enlarged pocket of said cylindrical extension against the central bore therein opposite the seat surface of said inlet bore, a stem received in the central bore of the cylindrical extension for displacing said ball from the pocket therein against the seat surface of said inlet bore, and a hydraulically-actuated piston for displacing said stem along the bore in said valve member.

4,541,608

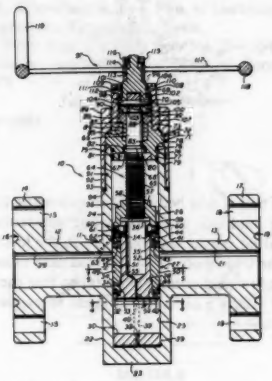
HIGH PRESSURE SHUT-OFF VALVE

Buford G. Forester, Houston, and Billy L. Redmon, Pasadena, both of Tex., assignors to Custom Oilfield Products, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 327,331, Dec. 4, 1981, Pat. No. 4,433,827. This application Oct. 17, 1983, Ser. No. 542,669

Int. Cl.⁴ F16K *31, 44*

U.S. Cl. 251—77 **18 Claims**



1. A high pressure shut-off valve comprising

a hollow valve body having an open end, a closed end and a cylindrical cavity therein,

cover means for said open end,

aligned tubular inlet and outlet portions on opposite sides of said valve body defining a continuous straight bore intersecting said cavity at a right angle thereto,

a plug valve assembly positioned in said cavity and comprising a first piston having a sliding fit in said cavity between an extended position abutting said closed end and a retracted position a predetermined distance therefrom,

said first piston having an end portion with a laterally extending valve passage therethrough and an intermediate portion closing said valve body bore when in said extended position and said valve passage being aligned with said valve body bore when in said retracted position,

said first piston being a hollow piston with a smooth cylindrical surface including said intermediate portion,

said cylindrical surface having circular grooves in diametrically opposed positions defining cylindrical surface portions of a size closing said casing bore when in a retracted position,

a plurality of holes interconnecting each of said circular grooves with the bore of said first piston,

said intermediate portion being radially immovable, having a fixed radius and providing fixed surfaces of cylindrical configuration with a sliding fit in said cavity,

a sealing member of elastomeric material, filling said circular grooves and said holes and including elastomeric material positioned in the bore of said first piston, cooperable with said first piston intermediate portion and movable relative thereto and engaging the entire circumferential wall of said cavity around said bore to seal the same against leakage when closed,

operating means for moving said plug valve assembly between said extended and retracted positions and including means engageable with said sealing member in said extended position to compress the same longitudinally along said first piston to expand the same outward to seal against leakage of pressure around said radially immovable intermediate first piston portion, said engageable means comprising a second piston slidably movable inside first piston

and movable, upon movement of said plug valve assembly to a closed position, to a position engaging and compressing the portion of said elastomeric material in said first piston bore to apply substantially uniform pressure of said elastomeric material in said circular grooves against the surface of said valve cavity to seal around said valve cavity bore.

4,541,609

DISCONNECTABLE VALVE MOTOR DRIVE

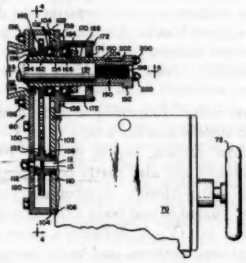
Glen H. Smith, Algona, Wash., assignor to Consolidated Controls Corporation, El Segundo, Calif.

Continuation of Ser. No. 275,340, Jun. 19, 1981, Pat. No. 4,436,278, which is a continuation of Ser. No. 128,958, Mar. 10, 1980, abandoned. This application Feb. 17, 1984, Ser. No. 581,338

The portion of the term of this patent subsequent to Mar. 13, 2001, has been disclaimed.

Int. Cl.⁴ F16K *31/05*; F16D *1/00*

U.S. Cl. 251—129.03 **17 Claims**



1. A drive assembly for coupling a valve stem to a motor, comprising:

a drive motor having an output member;

a valve having a stem with a threaded portion;

means for driving the stem of the valve from the motor which comprises:

a collar rotatably coupled to the drive motor output member;

a stem nut releasably and drivably engaged with the collar and threaded on the threaded portion of the stem, the stem nut and collar being co-axial with one another and substantially axially stationary, the stem nut having a manually engageable portion exteriorly positioned for access from the exterior of the drive assembly for direct rotation of the stem nut upon turning of the engagement portion; and

a removable locking member releasably locking the stem nut and the collar together in fixed relative relation for coaxial rotation, the locking member being separable from and interconnecting the stem nut and collar and being accessible from the exterior of the drive assembly for rapid and easy release of the collar from driving engagement with the stem nut by removal of the locking member without further disassembly of the drive assembly to allow manual rotation of the stem nut to drive the stem independent of the drive motor.

4,541,610

FLUID FLOW CONTROL VALVE ASSEMBLIES

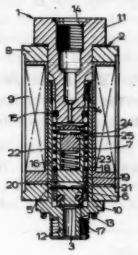
Desmond H. J. Reynolds, and Phillip A. Taft, both of West Midlands, England, assignors to Lucas Industries, Birmingham, England

Filed Nov. 14, 1983, Ser. No. 550,806

Claims priority, application United Kingdom, Nov. 24, 1982, 8233554

Int. Cl.⁴ F16K *31/02*

U.S. Cl. 251—129.21 **8 Claims**



1. A fluid flow control valve assembly comprising a housing, first and second fluid flow ports provided in said housing, said first and second ports being the only fluid flow ports in said housing, a valve means for controlling fluid flow between said ports, said first and second ports having respective first and second seats, and said valve means comprising first and second relatively movable valve members, said first valve member controlling fluid flow through said first port, and being movable between a closed position in which it engages said first seat to prevent fluid flow through said first port, and an open position in which it is spaced from said first seat to permit fluid flow through said first port, movement of said first valve member being controlled by a first biassing means urging said first valve member to close said first port, a valve-operating means for producing a force urging said first valve member to open said first port, and means producing a pressure differential across said first valve member; said second valve member controlling fluid flow through said second port, and being movable between a closed position in which it engages said second seat to prevent fluid flow through said second port, and an open position in which it is spaced from said second seat to permit fluid flow through said second port, movement of said second valve member being controlled by said first valve member, means producing a pressure differential across said second valve member and second biassing means urging said second valve member to close said second port, said valve means having first, second and third operating states, a first state in which said first valve member is in said closed position and said second valve member is in said open position, a second state in which said second valve member is in said second position and said first valve member is in said open position, and a third state in which said first and second valve members are in said open positions to permit fluid communication between said ports.

4,541,611

ARRANGEMENT FOR CONTROLLING AN AIR DUCT

Gerd Tannenläufer, Remscheid; Julius Frank, Cologne, and Bernhard Forsting, Monchen-Gladbach, all of Fed. Rep. of Germany, assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 3, 1983, Ser. No. 538,629

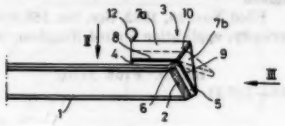
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1982, 3242242

Int. Cl.⁴ F16K *31/44*

U.S. Cl. 251—228 **9 Claims**

1. An arrangement for pivoting a flap about a hinge forming

an axis relative to a duct comprising two actuating elements connected to the flap and the duct, respectively, and each pivotable about a hinge forming an axis transverse to the axis of the flap, the two actuating elements being further pivotably



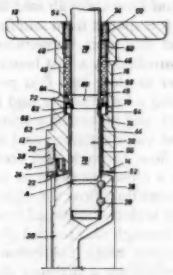
connected to one another about a hinge forming a common further axis transverse to the axis of the flap, whereby pivoting of the actuating elements serves to pivot the flap relative to the duct.

4,541,612

ROTATABLE SHAFT ASSEMBLY

Paul A. Yohner, Houston, Tex., assignor to Keystone International, Inc., Houston, Tex.

Filed Apr. 3, 1984, Ser. No. 596,283
Int. Cl.⁴ F16K *1/22*
U.S. Cl. 251—308 **9 Claims**



1. A rotatable shaft assembly comprising:

a body having a bore therein, said bore having a first end and a second end, said body further including an annular abutment formed intermediate said first and second ends of said bore and projecting radially inwardly into said bore;

a shaft rotatably received in said bore, said shaft having means forming an annular, generally axially facing shoulder intermediate the ends thereof, said shoulder having at least one surface facing said second end of said bore;

a retaining collar disposed in said bore adjacent said abutment, said retaining collar comprising an annular band and a plurality of resiliently, radially deflective fingers depending radially inwardly from said band, each of said fingers forming a strut portion terminating in a free end, said free end of said strut portion being engagable with said shoulder upon movement of said shaft toward said second end of said bore whereby said strut portion is placed in substantially compressive loading; and

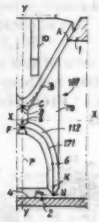
stop means disposed in said bore for stopping movement of said retaining collar toward said second end.

4,541,613

GATE VALVE

Pierre L. C. C. Barbe, Toul, France, assignor to Pont-A-Mousson S.A., Nancy, France

Continuation of Ser. No. 296,096, Jun. 2, 1981, abandoned. This application Mar. 7, 1984, Ser. No. 585,040
Claims priority, application France, Jun. 10, 1980, 80 12849
Int. Cl.⁴ F16K *3/12, 3/316*
U.S. Cl. 251—326 **9 Claims**

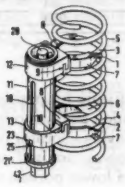


1. In a gate valve comprising a body having a horizontal cylinder flow tube which has a flow axis (X—X) and an inner cylindrical flow surface, means defining two seat surfaces partly surrounding and also partly comprising the cylindrical flow surface, and a closure member carrying seal beads of elastomer and guided in said body to be movable in translation along a vertical axis (Y—Y) between a valve opening position and a valve closing position, said beads being adapted to bear on the seat surfaces in said valve closing position of the closure member and having substantially the same general shape as the seat surfaces; the improvement wherein the two seat surfaces provide for sealing against the beads and define two continuous seal lines (61) which define closed curves and which, in projection in a first symmetry plane (Q) containing said flow axis (X—X) and said vertical axis (Y—Y), intersect in a second symmetry plane (P) which contains said vertical axis (Y—Y) and is perpendicular to said flow axis (X—X) and intersect in the vicinity of a horizontal diametral plane containing said flow axis in a substantially X configuration, respective upper parts of said two seal lines tapering downwardly to a vertex portion located at least close to said horizontal plane when viewed in said direction, said respective upper portions of respective lower parts of said two seal lines tapering progressively upwardly to a vertex portion located at least close to said horizontal plane when viewed in said direction, portions of said two seal lines which are in said vicinity passing through said horizontal plane and inclined thereto at an angle other than in the projection on said first symmetry plane (Q); and wherein the closure member comprises two semi-closure members which are assembled on a vertical joint plane which is perpendicular to said flow axis, each semi-closure member comprising a thin shell having reinforcing means in abutting relation to the other shell, stud means on one of said shells and cavity means on the other shell being in interengaged relation so as to position a semi-closure member with respect to the other semi-closure member.

4,541,614
SPRING CRAMP, PARTICULARLY FOR AXLE SPRINGS OF MOTOR VEHICLES

Horst Klann, Terra Wohnpark 12, Villengen-Schwenningen 24, Fed. Rep. of Germany

Filed Oct. 3, 1984, Ser. No. 657,343
Claims priority, application Fed. Rep. of Germany, Oct. 4, 1983, 3335979
Int. Cl.[4] B23P *19/04*
U.S. Cl. 254—10.5 8 Claims

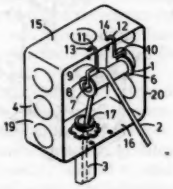


1. A cramp for a coiled spring comprising a guide tube, first and second slide members relatively movably mounted on said guide tube, means associated with said guide tube for moving said slide members relatively, a clamping jaw carried by each of said spring members arranged in opposite facing arrangement for engaging the spring at successive coils arranged therebetween, each jaw member having a median plane and a circularly extending leg on each side of said median plane and with a continuous oblique spring coil contact surface for engaging respective spring coils, a circularly cylindrical outer wall extending outwardly in an axial direction toward the respective other clamping jaw from and bounding the radial outer side of said contact surface, an axially projecting backing rib bounding the inner edge of said contact surface and having a circumferential extension such that it extends at least from 30° up to 100° of arc measured from the center of said jaw, said backing rib being cylindrical relative to said median plane, said legs having end portions adjacent their ends which are 1½ to 2 times wider than its central portion between said end portions, said contact surface being arcuate through 180° and having substantially parallel edges beyond 180°.

4,541,615
GUIDE ROLLER FOR FEEDING ELECTRICAL WIRE INTO CONDUIT

Zelbert D. King, Jr., 2051 Naperville Rd., Plainfield, Ill. 60544

Filed Oct. 28, 1983, Ser. No. 546,705
Int. Cl.[4] E21C *29/16*
U.S. Cl. 254—134.3 FT 17 Claims

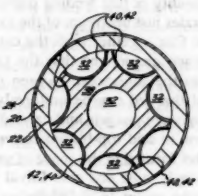


1. A quick mount guide to feed a flexible continuous length item into an opening to a tubular structure, including said tubular structure, said tubular structure including connecting means spaced apart from said opening thereto for connection of said quick mount guide thereto, said quick mount guide comprising a guide member, quick mount means to quickly mount said guide member to said connecting means to support said guide member in position to feed said continuous length item over said guide member and into said opening to said tubular structure as said continuous length item is being drawn in the direction from said quick mount guide into the opening to said tubular structure, said guide means including surface means to prevent scraping and catching of said continuous length item as it is being fed into said opening to said tubular structure, said connecting means and said quick mount means providing a swingable connection for said guide member and so located with reference to said opening to said tubular member whereby said guide member can swing to closer alignment with opening to and longitudinal axis of said tubular member by the pull of said continuous length item itself as it is being drawn into and through said tubular structure.

4,541,616
THERMAL BURNING ROD

Jessie L. Dean, 6119 W. Bank Expressway, Marrero, La. 70072

Filed May 23, 1984, Ser. No. 613,513
Int. Cl.[4] B23K *7/00*
U.S. Cl. 266—48 18 Claims

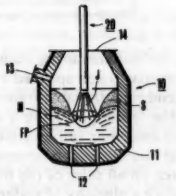


1. An exothermic burning rod, adapted for use in a gas-fed burning torch, comprising:
an elongate external tube means;
exothermic fuel means extending axially within said tube means, further comprising:
an essentially ferrous inner core;
a copper outer coating; and
gas passing means internally extending within said tube adjacent said exothermic fuel means.

4,541,617
LANCE STRUCTURE FOR OXYGEN-BLOWING PROCESS IN TOP-BLOWN CONVERTERS

Kohji Okane; Hidemasa Nakajima; Shozo Okamura; Masanobu Sueyasu, all of Osaka, and Takashi Manago, Kashima, all of Japan, assignors to Sumitomo Metal Industries, Osaka, Japan

Filed Apr. 22, 1983, Ser. No. 487,566
Claims priority, application Japan, Apr. 23, 1982, 57-69379
Int. Cl.[4] B23K *37/04*
U.S. Cl. 266—65 12 Claims



1. A lance structure to be used with a top-blown converter for blowing oxygen from the top into molten iron contained in the converter thereby to refine the molten iron into steel, comprising:

a sheath having a generally cylindrical side wall and a blinded bottom wall;

a generally cylindrical flux supply tube disposed coaxially in said sheath and having its bottom wall blinded and spaced from the bottom wall of said sheath, said flux supply tube defining a powdered flux supply passage for carrying slag-forming, powdered flux therethrough in a carrier gas and supplying the powdered flux to supersonic jets of an oxygen gas;

a generally cylindrical oxygen supply tube disposed coaxially in said sheath and around said flux supply tube and having its bottom wall blinded and spaced from the bottom wall of said sheath, said oxygen supply tube defining an annular oxygen supply passage for supplying the oxygen gas;

a plurality of Laval nozzles leading from said oxygen supply tube and disposed in the bottom wall of said oxygen supply tube substantially equi-angularly on the axis of said sheath, said Laval nozzles having their exits opening in the bottom wall of said sheath for blowing the oxygen gas in the form of the supersonic jets into the molten iron in said top-blown converter, said flux supply tube being formed with a plurality of flux feeding ports which open into said Laval nozzles just upstream of the exits thereof to feed the powdered flux together with the carrier gas to the supersonic oxygen gas jets so that the carrier gas flows may merge into the supersonic oxygen gas jets, whereby the powdered flux fed can be uniformly dispersed in the supersonic oxygen gas jets and carried by the same into the molten iron in said top-blown converter; and

a water jacket formed in the space of said sheath around said oxygen supply tube and said Laval nozzles and supplied with cooling water in a circulating manner for cooling down the side and bottom walls of said sheath and the exits of said Laval nozzles.

4,541,618

JIG FOR FRAMED WOODEN PANELS

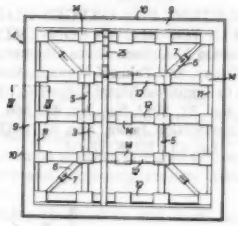
Michael R. Bruno, 19, Romilly Park Rd., Barry, Glamorgan, England

Filed Dec. 23, 1982, Ser. No. 452,730

Claims priority, application United Kingdom, Dec. 23, 1981, 8138767; Oct. 16, 1982, 8229226

Int. Cl.[4] B25B *5/00*

U.S. Cl. 269—41 **8 Claims**



1. A jig for manufacturing framed wooden panels comprising a rectangular frame spanned by an array of parallel intermediate members adjustable transversely to their longitudinal direction, the frame providing a continuous underneath support surface extending full length of each side of the frame for a batten laid thereon and an external barrier laterally to confine such a batten on all sides of the frame, the intermediate members providing a plurality of underneath support zones for any batten laid across them at the same level as the frame support surface and having groups of upstanding locators for panel battens extending in either orthogonal direction, and said barrier and said location allowing access to one side of a batten where that batten is abutted by another on the opposite side.

4,541,619

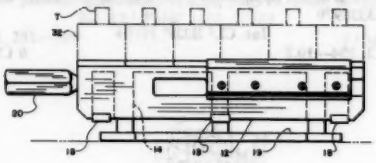
ARTICLE POSITIONING DEVICE

Martin A. Herman, 2085 W. 114th St., Cleveland, Ohio 44102

Filed Dec. 5, 1983, Ser. No. 557,903

Int. Cl.[4] B23Q *1/04*

U.S. Cl. 269—43 **10 Claims**



1. An article positioner fixture for positioning a plurality of articles in accurate association and comprising

an elongate base block having a locator recess extending the length thereof in its top surface and one or more weight reducing openings in a lower portion thereof;

a plurality of locator inserts on the top surface of said base block and secured thereto;

a matrix box secured to each said locator insert on an upper surface thereof;

said locator inserts operatively engaging said locator recess to be accurately positioned on said base block;

said locater inserts having holes therein for means for securing said matrix boxes thereto, said matrix boxes being aligned and having article blanks positioned therein with portions of such article blanks exposed,

flat surfaced rest pads secured to spaced parts of the lower surface of said base block to support the same,

screw means individually securing a said matrix to a said locator insert, and

a tapped bushing non-rotatably engaging a said hole in said locator insert for receiving said screw means to enable said bushings to be replaced readily as wear occurs by matrix boxes being secured to and removed from engagement with said locator inserts.

4,541,620

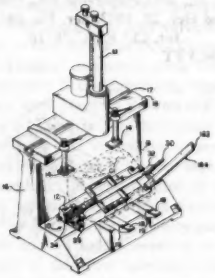
SLED FOR FIXTURING ENGINE BLOCKS

Donald B. Rottler, and David Engnell, both of King County, Wash., assignors to Rottler Manufacturing, Inc., Kent, Wash.

Filed Jun. 10, 1983, Ser. No. 502,974

Int. Cl.[4] B25B *1/24*

U.S. Cl. 269—46 **14 Claims**

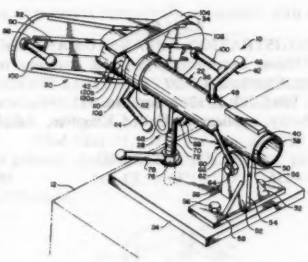


1. An apparatus for fixturing an engine block having inclined cylinders, such as a V-block or a Y-block, such that the cylinders are properly aligned with respect to a boring machine or the like, which comprises:

a rigid sled having an upper mounting surface for supporting the bottom of the engine block;

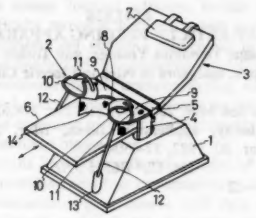
means for aligning the block on the mounting surface;
means for securing the block to the mounting surface such that the block will remain stationary with respect to the mounting surface after alignment; and
a bottom support surface on the sled beneath the mounting surface to support the sled, the bottom surface including:
a first support surface inclined with respect to the mounting surface for orienting the mounting surface at a first angle with respect to the first support surface; and
a second support surface inclined with respect to the mounting surface for alternately orienting the mounting surface at a second angle with respect to the second support surface, said second angle being greater than the first angle.

4,541,621
PORTABLE WELDING JIG
Alvin W. Amos, Rte. 11, Box 241-A, Bakersfield, Calif. 93308
Filed Apr. 1, 1983, Ser. No. 481,451
Int. Cl.[4] B23Q *1/04*
U.S. Cl. 269—51 **10 Claims**



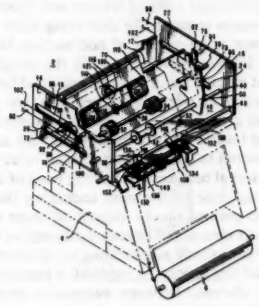
1. A portable welding jig providing work positioning and manipulating means configured for pipe flange welding at a remote field location and capable of establishing automatically a two-holed flange configuration, said welding jig comprising:
a. a base;
b. rotatable shaft means comprising a sleeve receiving a shaft internally thereof for rotation therein about a work axis, said shaft means being pivotally secured to said base at a pivot joint disposed proximate a first end of said shaft means and adjustably secured to said base at a generally vertically adjustable fixture means proximate the second end of said shaft means, whereby vertical adjustment of said second end will cause generally arcuate movement of said shaft means within a positioning plane containing said work axis;
c. flange mounting means secured to said second end of said shaft means, including a flange mounting plate extending generally radially outward therefrom defining a working plane normal to said positioning plane and adjustable flange fasteners for securing a selected flange to said plate for rotation about said work axis;
d. indexing means for locating said selected flange, borne on said plate, in a two-holed configuration, including reference means for presenting a reference inscription at a reference point corresponding to lateral leveling of a leveling plane generally normal to said positioning and working planes and an array of indexing inscriptions associated with said shaft, one of each of said indexing inscriptions corresponding to a predetermined angular orientation of said plate characteristic of a two-holed configuration for a respective standard pipe flange, whereby mating the indexing inscription corresponding to said selected flange with said reference inscription at said reference point presents said selected flange in a two-holed configuration on said plate in said working plane.

4,541,622
RECLINING BED FOR CHILDBIRTH
Akiko Tabuchi, Okayama, Japan, assignor to Kazuhisa Tabuchi, Okayama, Japan
Filed Dec. 22, 1983, Ser. No. 565,014
Int. Cl.[4] A61G *13/00*
U.S. Cl. 269—325 **2 Claims**



1. A reclining bed for childbirth comprising:
a detachable seat board from a seat board base contoured with curved cut-out that opens to the center front;
a backrest adjustable as to its tilting angle;
an auxiliary bed attachable to the seat board base; and
thigh crutches provided on the seat board for supporting thighs by holding them from below right and left sides of the buttock supporting seat portion of the seat board up to the inner sides of the thighs.

4,541,623
ALIGNMENT RESTRAINT STATION
Jose L. Huerta, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 27, 1982, Ser. No. 453,023
Int. Cl.[4] B65H *9/14*
U.S. Cl. 271—10 **5 Claims**



1. Improved apparatus for aligning the leading edge of a first document to be fed at a feed station, including a plurality of feed rollers, and restraining second and subsequent documents to be fed comprising:
means for urging said documents to the feed station;
a pair of stationary stops arranged transversely of the feed path direction for engaging the leading edge of the document;
a bracket member located between said pair of stationary stops and adapted to be selectively moved into and out of the feed path;
a pair of lifting means, located at each end of the bracket member and actuable in response to a signal developed by the pair of stops, for lifting the leading edge of the document over the stops;
second and subsequent document restraining means con-

nected to and symmetrically positioned adjacent said lifting means comprising guide means located beneath the stationary stops; and

a pair of rotatably mounted backup rollers on the bracket member, and arranged symmetrically with respect to the lifting means and restraining means and positioned to cooperate with the feed rollers.

4,541,624

FLAT ARTICLE FEEDING APPARATUS

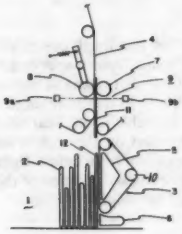
Tsutomu Sasage; Tomohisa Yoshida, and Toshio Yoshida, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Mar. 23, 1983, Ser. No. 478,628

Claims priority, application Japan, Mar. 24, 1982, 57-41316[U]; Mar. 30, 1982, 57-45049[U]

Int. Cl.⁴ B65H *5/08*

U.S. Cl. 271—12 **10 Claims**



3. A delivery system comprising storage means containing a stacked plurality of flat articles of varigated length to be picked up and delivered one by one to a distant location, a running suction belt means for cyclically and sequentially picking up one at a time the outermost one of said stacked plurality of flat articles and for carrying said picked up flat articles along with said running section belt means, the running suction belt means sequentially delivering each flat article to other equipment at an output of said suction belt means, the delivery rate inherently varying with the lengths of the flat articles so that enough space must be provided between the flat articles to prevent an overlapping between two of the longest deliverable flat articles, detector means for detecting a passage of leading and trailing ends of each of said flat articles as they are being delivered to said other equipment whereby the detector finds an interval between the trailing edge of one flat article and the leading edge of the next uncoming flat article, and delivery speed control means located adjacent the output of said suction belt means and operated responsive to said detector means for selectively accelerating or decelerating individual ones of said flat articles to establish a predetermined minimum interval distance between successive ones of said flat articles regardless of their length whereby a maximum number of said flat articles are packed into a minimum amount of transport space in said delivery system.

4,541,625

SHEET FILM SUPPLY APPARATUS

Naoki Yuguchi, Yokohama, and Keiichi Kawasaki, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 230,501, Feb. 2, 1981, abandoned. This application Aug. 3, 1983, Ser. No. 519,924

Claims priority, application Japan, Feb. 12, 1980, 55-15776; Feb. 15, 1980, 55-17404

Int. Cl.⁴ B65H *3/24*

U.S. Cl. 271—42 **17 Claims**

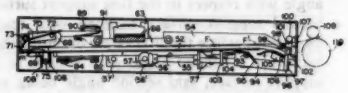
1. A supply apparatus, comprising:

support means for supporting a plurality of sheets;

an outlet for feeding out an uppermost sheet of said sheets therethrough, said outlet being provided at one end side of said support means;

means for forming a gap of such dimension into which an end of the uppermost sheet opposite to said outlet may enter, said gap forming means being provided at a second end side of said support means opposite to said outlet;

slide means for sliding the uppermost sheet into said gap;



spacing means disposed on at least one side of said gap forming means with respect to a direction perpendicular to the direction along which said outlet and said gap forming means are provided to space the uppermost sheet apart from the remaining sheets while the uppermost sheet is slid by said slide means; and

carrying means for carrying the uppermost sheet to said outlet from said gap.

4,541,626

SHEET REGISTRATION APPARATUS AND DEVICE

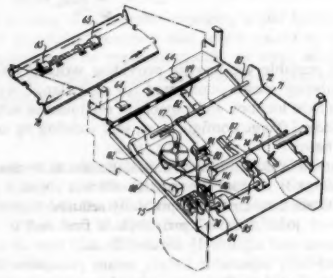
Jeffrey A. Millen, Letchworth, England, assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 5, 1983, Ser. No. 511,034

Claims priority, application United Kingdom, Jul. 7, 1982, 8219712

Int. Cl.⁴ B65H *9/00*

U.S. Cl. 271—236 **18 Claims**



1. A sheet registration apparatus for registering a sheet on a surface against a registration stop, comprising a device having a plurality of resilient blades lying in radial planes passing through an axis arranged generally normal to the surface and about which said blades are rotatable with said blades extending in the direction of said axis towards said surface and terminating in sheet engaging tips arranged to wipe over a limited arc of rotation against a sheet on the surface to urge it towards said registration stop.

4,541,627

EXERCISE ROWING MACHINE

W. Douglas MacLean, 4532 193rd Pl. SE., Issaquah, Wash. 98027, and Robert A. Rasmussen, 20820 NE. 42nd St., Redmond, Wash. 98052

Filed Jul. 29, 1983, Ser. No. 518,378

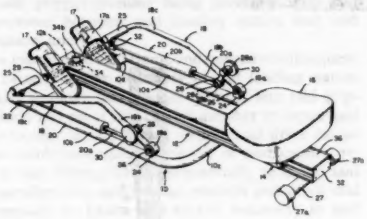
Int. Cl.⁴ A63B *21/00, 69/06*

U.S. Cl. 272—72 **12 Claims**

1. In combination,

an elongated, generally rectangular, tubular rail for an exercise rowing machine formed with outwardly opening channels at opposite sides to provide a laterally spaced

pair of roller tracks, and formed at the bottom with an externally exposed, longitudinal T-slot open at the ends for receiving the head and neck of bolts projecting from the rail to make connection with frame members, said rail having a longitudinal slot in its top wall extending from one end of the rail a minor part of the length of the rail,



a seat carriage with rollers tracking on the tracks,

a timer housed within said rail and having a shaft projecting through said slot, said shaft having a pointer knob on its free end; and

rowing arm means operatively associated with said rail.

4,541,628

WEIGHT LIFTING TYPE EXERCISE DEVICE

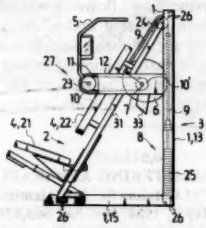
Arno Parviainen, Lehdesniityntie 3 C, SF-00340 Helsinki 34, Finland

Filed May 21, 1982, Ser. No. 380,920

Claims priority, application Finland, Apr. 20, 1982, 821379

Int. Cl.⁴ A63B *21/00*

U.S. Cl. 272—134 **1 Claim**



1. An exercise device comprising:

a frame including a front section and a rear section, the rear section comprises a vertical portion of said frame and the front section comprises a substantially rectilinear inclined portion of said frame, said front section being tilted against the rear section and being joined together at one end;

support means located substantially equidistantly from the sides of the front section and in front of the front section for supporting an operator;

a first axle extending parallel to and horizontally between said front section and said rear section;

an eccentric element mounted centrally on said first axle behind said support means;

first transmission gear means mounted at both ends of the first axle;

two second axles located on the opposite side of the front section from the first transmission gear means and on the same side of the front section as the support means;

second transmission gear means located at one end of each of said two second axles, said second transmission gear means located on flanking sides of the support means;

operating means secured to the other end of each of said two second axles and being rotatable with said two second axles for receiving forces exerted on said operating means by the operator when seated in said support means and said operating means transferring the forces to said second transmission gear via said two second axles;

first transmission means interconnecting said first transmission gear means and each said second transmission gear means transferring movement of each of the second transmission gear means to said first transmission gear means, said first axle and said eccentric element;

counterforce means located adjacent to the rear section being vertically movable between a rest position and an elevated position for resisting movement in response to force being applied to the operating means by a user;

second transmission means interconnecting said eccentric element and said counterforce means transferring movement of the eccentric member via said operating means to said counterforce means; and

enclosure means located on flanking sides of the support means surrounding said first transmission gear means, said second transmission gear means, said first transmission means and both ends of said first axle, said enclosure means being secured to the front section and said rear section, interconnecting said front section and said rear section, said enclosure means extending horizontally on both sides of the support means from the rear section to the support means.

4,541,629

PLASTIC BASEBALL BAT AND METHOD OF MAKING THE SAME

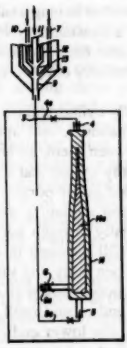
William Witkowski, 909 Troupe Rd., Harborcreek, Pa. 16421

Continuation-in-part of Ser. No. 358,339, Mar. 15, 1982, Pat. No. 4,457,511. This application Jun. 29, 1984, Ser. No. 626,427

The portion of the term of this patent subsequent to Jul. 3, 2001, has been disclaimed.

Int. Cl.⁴ A63B *59/06*

U.S. Cl. 273—72 R **6 Claims**



1. A baseball bat having a central core of expanded thermoplastic resulting from a mixture of thermoplastic and a foaming agent surrounded by a discrete skin of thermoplastic per se, and having been made by a process wherein both the core mixture and the thermoplastic per se are coinjected while in conforming contact and while the thermoplastics are in a heated and viscous state and coinjected under pressure in a mold cavity having the shape of a baseball bat, the outer surface of the thermoplastic per se being in contact with the mold cavity and the outer surface of the mixture being in contact with the inner surface of the thermoplastic per se, the thermoplastic per se and mixture being distinct materials which are united at the surfaces which are pressured into contact while the thermoplastics are in the viscous state and which become joined into a unitary rigid body upon cooling.

4,541,630

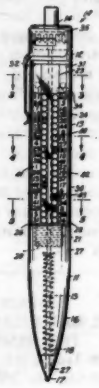
WRITING INSTRUMENT WITH RANDOM NUMBER SELECTOR

Johann H. Dirks, No. Yonkers, N.Y., assignor to JHD Holding, Ltd., Yonkers, N.Y.

Continuation-in-part of Ser. No. 584,760, Feb. 29, 1984, abandoned. This application Nov. 2, 1984, Ser. No. 667,564

Int. Cl.⁴ A63F *3/06*; **B43K** *29/00*; **G07C** *15/00*

U.S. Cl. 273—144 B **13 Claims**



1. A retractable ball point number game pen, comprising:

(a) a substantially cylindrical pen body tapering from an upper end to a narrower lower end;

(b) a central member having a substantially cylindrical lower portion and a substantially cylindrical upper portion of smaller diameter than said lower portion, said lower portion being coaxially coupled to said upper end of said pen body;

(c) a substantially cylindrical transparent sleeve surrounding said central member, said upper portion and said sleeve defining, between them, an annular first reservoir;

(d) a substantially cylindrical upper end member coaxially coupled to said upper portion of said central member;

(e) pen retraction actuating means disposed in an orifice extending axially through said upper end member;

(f) a ball pen refill disposed in an orifice extending axially through said pen body and said central member, one end of said refill cooperating with said actuating means so that the opposite end of said refill may be extended from and retracted into the lower end of said pen body;

(g) at least one first slot communicating with said first reservoir and extending along the surface of said lower portion of said central member;

(h) a recess formed in the surface of said lower portion of said central member, said recess and said transparent sleeve defining between them a second reservoir; and

(i) at least one second slot communicating with said second reservoir and extending along the surface of said lower portion of said central member;

(j) a plurality of balls which are sized to fit and are disposed in said first and second reservoirs and said first and second slots, at least one of said balls disposed in each of said first reservoir and slot and said second reservoir and slot being visually distinguishable from the remainder of said balls; and

(k) number indicia operatively associated with said slots, such that said balls provide a random indication of numbers when arranged in said slots.

4,541,631

GOLF CLUB

Howard A. Sasse, 2101 Sandhills Blvd., Southern Pines, N.C. 28387

Filed Oct. 3, 1983, Ser. No. 538,538

Int. Cl.⁴ A63B *53/08*, *69/36*

U.S. Cl. 273—170 **3 Claims**

1. A golf club having a hollow head portion connected to a hollow shaft portion, forming an enclosed internal chamber within the club, a flowable weight moveable within said chamber, a valve for preventing said flowable weight from passing from said shaft portion into said hollow head portion, said valve including means for allowing said flowable weight to flow from said hollow shaft portion into said hollow head portion, said last named means being actuable by centrigual force acting thereon during the downswing of a golf club.

4,541,632

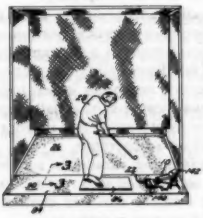
GOLF BALL TEEING APPARATUS

Thomas H. Tillery, 3791 Catalina St., Los Alamitos, Calif. 90720

Filed May 1, 1984, Ser. No. 605,935

Int. Cl.⁴ A63B *57/00*

U.S. Cl. 273—201 **20 Claims**



1. Golf ball teeing aparatus comprising:

a frame;

a ball receptacle adjacent said frame defining a loading station for receiving a ball;

an elongated carrier member having longitudinally spaced apart first and second stop means and a carrier extremity, said carrier member being pivotally carried by said frame for location of said carrier extremity alternately in said loading station and a hitting station;

an elongated gripper member having a gripper extremity and coupled to said carrier member for longitudinal move-

ment relative to said carrier member between said first and second stop means to define, respectively, a gripping position in which said gripper extremity is extended for urging a ball in said loading station against said carrier extremity, and a release position in which said gripper extremity is retracted for releasing a ball in said hitting station, said gripper member being pivotable with said carrier member between said loading station and said hitting station; and

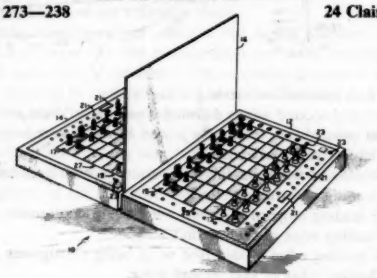
drive means mounted to said frame and operative subsequent location of said carrier extremity in said loading station sequentially to move said gripper member into said gripping position and pivot said carrier member to locate said carrier extremity in said hitting station, said drive means being reversible subsequent location of said carrier extremity in said hitting station sequentially to move said gripper member into said release position and pivot said carrier member to locate said carrier extremity in said loading station.

4,541,633

GAME WITH TWO SEPARATED ELECTRICALLY-CONNECTED BOARDS

Leston L. Newbill, 927 N. Erringer Rd., Simi Valley, Calif. 93065

Filed Sep. 14, 1982, Ser. No. 417,836
Int. Cl.[4] A63F *3/02*
U.S. Cl. 273—238 **24 Claims**



1. An electronic game having two chess-like boards wherein each board contains a playing field consisting of areas in a matrix, separated to conceal the moves made by each player from the other, having two sets of men positioned on each board, and further comprising:

a data memory;

means for detecting the position of each of the men, the improvement comprising:

means for initializing the positions of the men in said memory

means for storing the detected positions in said memory sequentially as the game progresses;

means for analyzing the location of the men and comparing to previous locations, including:

means for determining and indicating whether attempted moves are legal according to established rules, and inhibiting the storage of positions resulting from illegal move attempts;

means for determining and indicating conditions of check, comprising:

means for determining and indicating the direction of check, wherein said direction of check includes at least one of horizontal, vertical, diagonal, or knight;

means for determining and indicating the player to move next;

means for determining and indicating the exact number of legal pawn moves that would result in the capture of opposing men, wherein the legality of the pawn moves are defined by the standard rules of chess; and

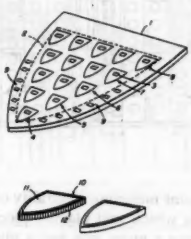
means for controlling the sequence of operations performed by the electronic game.

4,541,634

BOARD GAME

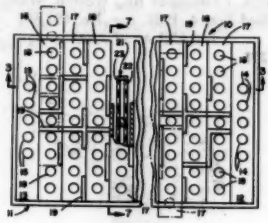
Richard H. Nolan, 7 Lawrence Rd., Weston, Mass. 02193

Filed Feb. 4, 1985, Ser. No. 697,890
Int. Cl.[4] A63F *3/00*
U.S. Cl. 273—271 **7 Claims**



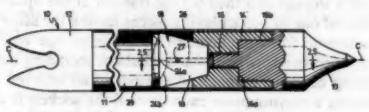
5. A plurality of game boards, each having (a) non-ordered storage sockets for storage and (b) ordered sockets, said ordered sockets being arranged in a number of rows, the number of sockets in the first row being one, and the number of sockets in each succeeding row being one more than that in the preceding row, each game board being adapted to have an owner associated therewith, a multiplicity of playing pieces adapted to fit in said sockets, each playing piece having a first non-valued characteristic and a second non-valued characteristic, such characteristics being selected from a class having a number of members equal to said number of rows, each said playing piece being so constructed that a first side thereof exhibits both said first characteristic and said second characteristic while a second side thereof exhibits only said first characteristic, the number of playing pieces exhibiting any one first characteristic being the same as the number of playing pieces exhibiting any other first characteristic (and, among those playing pieces exhibiting the same first characteristic, about one-half having a second characteristic identical to its first characteristic, and the second characteristic of the remainder being equally distributed among the remaining characteristics), a small number of said playing pieces having on their respective first side a second characteristic which differs from said first characteristic but which bears a mark, means for repeatedly selecting a first characteristic at random in such a manner that the consequence of each such selection is only (a) the addition of a playing piece having the selected first characteristic to the selector's storage and then (b) the transfer at the option of the selector, of one or more playing pieces having the same second characteristic from the selector's storage to one row of the selector's ordered sockets, and a tabulator including means for recording only the owner and number of all ordered sockets containing a playing piece each time all the sockets in any one game board contain a playing piece, said owner being herein referred to as a "joust-winner" and being entitled to a premium, means for adding said number of ordered sockets to the accumulated number of filled sockets for that game board, means for identifying the joust-winner's premium and adding it to the accumulated number of filled ordered sockets for the game board owned by the joust-winner, means for identifying a goal score and means for indicating when the total accumulated number of filled ordered sockets for any of said game boards equals or exceeds said goal score and for indicating the owner of that game board, said marked playing pieces having the property that any player having more than one ordered socket on his game boad filled with a marked playing piece shall receive a score equal to a multiple of the number of filled ordered sockets on his game board.

4,541,635
BOARD GAME STRUCTURE
Philip L. Shoptaugh, Piedmont, Calif.
Filed Aug. 1, 1983, Ser. No. 519,074
Int. Cl.[4] A63F *3/00*
U.S. Cl. 273—284 **18 Claims**



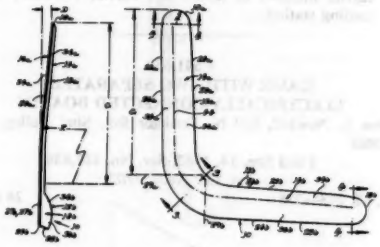
1. In a board game including a plurality of playing pieces and a game board on which said playing pieces are moved, said game board having a given axis and a plurality of elongated rectilinear sliders mounted thereon for movement in side-to-side relation with respect to each other at a common angle to said given axis of said board, detent means tending to restrain each of said sliders in predetermined positions in their movement with respect to each other, and stop means for establishing the maximum extent of said movement of said sliders with respect to each other, the improvement wherein said detent means comprises a detent cam surface and a detent cam follower held in engagement solely by gravity forces acting on said sliders with said plurality of sliders each being provided with one of said detent cam surface and said detent cam follower and said game board being provided with the other of said detent cam surface and said detent cam follower and wherein said plurality of sliders are each restrained against removal from said game board by a pin engaged with a slot, said plurality of sliders each being provided with one of said pin and said slot and said board being provided with a plurality of the other of said pin and said slot.

4,541,636
FLUID PRESSURIZED ARROW SHAFT FOR ARCHERY ARROWS
Stanley A. Humphrey, 2621 Oak Park Ave., Minneapolis, Minn. 55411
Filed Feb. 27, 1985, Ser. No. 706,120
Int. Cl.[4] F41B *5/02*
U.S. Cl. 273—416 **27 Claims**



1. An archery arrow having an axially elongated hollow shaft that has a central axis of elongation, a front end and a rear end, a nock mounted on the shaft rear end in fluid sealing relationship therewith, an arrow point, an insert mounted by the shaft front end to extend therein in fluid sealing relationship therewith for removably mounting the arrow point to extend forwardly of the shaft, said insert having a bore extending axially therethrough and opening to the shaft interior, and a resilient fluid seal member mounted in the shaft adjacent to the insert for in combination with the shaft and the nock define a first gas chamber that extends at least a major portion of the length of the shaft for retaining gas under a higher pressure than atmospheric pressure in the chamber and permitting selectively applying gas under pressure to flow into said chamber to increase the fluid pressure in the chamber.

4,541,637
BOOMERANG
John Atkielski, 3542 N. Albany St., Chicago, Ill. 60618
Filed Feb. 10, 1983, Ser. No. 465,447
Int. Cl.[4] A63B *65/08*
U.S. Cl. 273—426 **1 Claim**

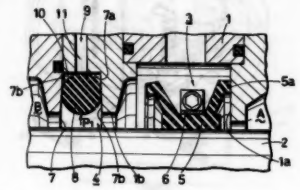


1. A molded boomerang comprising:
first and second wings defining a generally V-shaped body,
said wings being integrally joined at a common juncture and having rounded ends,
each of said wings having upper and lower surfaces and having leading and trailing edges,
the leading edge of said first wing being contiguous with the trailing edge of said second wing,
the trailing edge of said first wing being contiguous with the leading edge of said second wing,
each of said leading and trailing edges including a relatively long linear portion,
the linear portion of the leading edge of said first wing and the linear portion of the trailing edge of said second wing defining an included angle of about 97°,
the linear portion of the trailing edge of said first wing and the linear portion of the leading edge of said second wing defining an included angle of about 93°,
each of said wings having a maximum horizontal width of about 2.3 inches and a maximum vertical thickness of about 0.32 inch,
each of said wings being tapered to decrease progressively in thickness and in width toward its respective end,
each of said lower wing surfaces having an upward longitudinal radius of curvature of about 100 inches,
said upper and lower wing surfaces being configured to define an airfoil profile for each wing which varies in configuration along the length of the wing,
each of said upper wing surfaces comprising a leading arcuate surface and a trailing arcuate surface blending with said leading arcuate surface,
each of said arcuate surfaces having a radius of transverse curvature at any particular transverse section,
the radius of transverse curvature of each of said leading arcuate surfaces varying from about 0.985 inch near the end of the wing to about 2.7 inches at the juncture of the wings,
the radius of transverse curvature of each of said trailing arcuate surfaces varying from about 5.0 inches near the end of the wing to about 2.7 inches at the juncture of the wings,
said lower wing surface having no transverse curvature.

4,541,638
EMERGENCY SHAFT SEAL DEVICE BY DEFORMATION OF PACKING RING

Takahisa Ogawa, and Hirofumi Aritsubo, both of Sanda, Japan, assignors to Nipon Pillar Packing Co.. Ltd., Japan

Filed Aug. 21, 1984, Ser. No. 642,914
Claims priority, application Japan, Nov. 9, 1983, 58-211439
Int. Cl.[4] F16J 9/00
U.S. Cl. 277—9 14 Claims



1. An emergency shaft seal device arranged in association with a main shaft seal device about a rotatable shaft, comprising:

a seal housing having an inner periphery wherein an annular receiving groove is formed on the inner periphery along the periphery of the rotatable shaft;

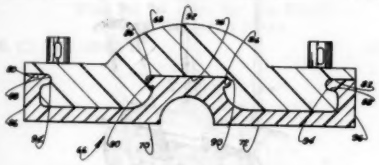
a packing ring of rubber material the inside diameter of which is larger than the outside diameter of the rotatable shaft and which is received in the receiving groove of the seal housing in such a manner as to be free and not in contact with rotatable shaft; and

pressing means provided on the side of the seal housing and by which the packing ring is pressed and deformed by a pressurized fluid so as to be tightly pressed against the periphery of the rotatable shaft.

4,541,639
RAM-TYPE BLOWOUT PREVENTER WITH IMPROVED RAM FRONT PACKER

Bolie C. Williams, III, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Filed Sep. 16, 1982, Ser. No. 419,080
Int. Cl.[4] F16J 15/56; E21B 33/06
U.S. Cl. 277—73 8 Claims



1. A ram-type blowout preventer comprising

a body having a central bore therethrough and aligned guideways extending outward from the central bore,

a ram in each of said guideways and having a front recess,

a front packer positioned in said ram front recess,

said front packer including an elastomeric backing portion having a recess in its front face and an elastomeric insert portion removably positioned in said recess of said backing portion,

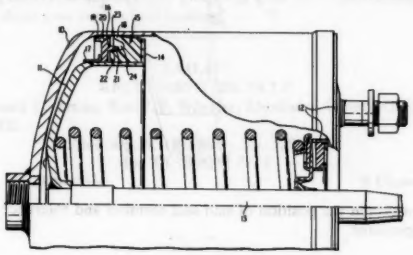
said recess in said backing portion including re-entrant recesses at each side of the rear of the recess, and

said insert portion having lips which fit tightly into said re-entrant portions of said recess.

4,541,640
PISTON SEALING ARRANGEMENT

Geoffrey R. Tregonning, Chippenham, England, assignor to Westinghouse Brake and Signal Co., Chippenham, England

Filed Jan. 18, 1983, Ser. No. 458,968
Claims priority, application United Kingdom, Jan. 29, 1982, 8202636
Int. Cl.[4] F16J 15/32
U.S. Cl. 277—152 14 Claims



1. A piston sealing arrangement consisting of:

a piston and a cylinder with said piston movably located in said cylinder and having a pressure and a non-pressure side, said piston also being designed to be rockable at least 3° either side of normal in a radial plane in said cylinder;

a flange extending radially from said piston adjacent the non-pressure side of said piston;

a flexible piston sealing ring located on said piston, said piston ring being U-shaped, opening axially toward the pressure side of said piston and engaging said flange on the pressure side of said flange; and

a single multi-function ring in the form of a single separate wear band located on said piston on the pressure side of said piston ring, said wear band being relatively rigid compared to said piston ring and having a relatively thin circumferential portion providing contact with said cylinder such that the plane of contact between said circumferential portion of said wear band and said cylinder is the radial plane about which said piston rocks, said wear band also being located close to the line of contact between said piston ring and said cylinder such that the radial motion of said piston ring during rocking of said piston is minimized.

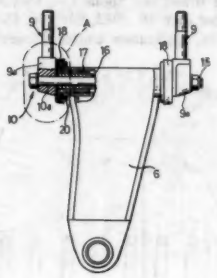
4,541,641
SEAL MEMBER AND TOLERANCE COMPENSATOR

Kanji Kubo, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 14, 1983, Ser. No. 551,298
Claims priority, application Japan, Nov. 24, 1982, 57-206662
Int. Cl.[4] B23D 7/00
U.S. Cl. 277—183 4 Claims

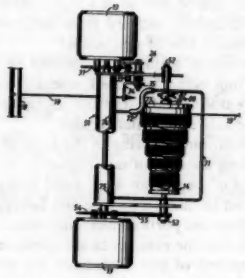
1. A circular seal member and tolerance compensator made from an elastic material, comprising, a base portion having an opening of a predetermined size, a leg portion, said leg portion having two axially directed faces and a series of radially ex-

tending grooves and protusions of predetermined radii and height, respectively, formed in at least one face, and means to



maintain the position of said seal member and tolerance compensator.

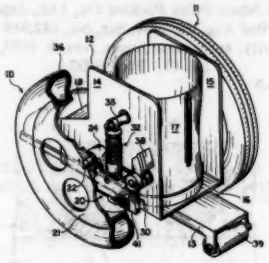
4,541,642
JUVENILE VEHICLE
Bjorn O. Svartz, 1408 Woodgreen Dr., Greensboro, N.C. 27420
Filed Jul. 25, 1983, Ser. No. 517,212
Int. Cl.[4] B60K *9/00*
U.S. Cl. 280—3 **13 Claims**



5. A vehicle comprising: a frame member, a wheel, said wheel attached to said frame member, a continuous stepped drum means having a large and a small step, said drum means rotatably mounted on said frame member for providing impetus to the vehicle by turning said wheel during rotation, cable means, said cable means wound first around said small step and continuing around said large step whereby rapidly unwinding said cable means provides impetus to the vehicle.

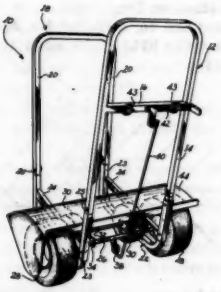
4,541,643
TWO WHEEL SKATING DEVICE
Ivan Pavincic, East Rutherford, Bergen, N.J. 07073
Filed Jun. 27, 1983, Ser. No. 507,736
Int. Cl.[4] A63C *17/14*
U.S. Cl. 280—11.21 **7 Claims**

1. A two wheel skating device comprising:
a frame adapted to accommodate the foot of a skater;
a first and second wheel;
wheel assembly means for rotationally mounting said first and second wheel on opposite sides of said frame, said wheel assembly means including a wheel axle for each wheel, ball bearings mounted on each axle and unidirectional needle bearings for each wheel to permit rotation of said first and second wheel in only one direction; and
suspension means for pivotally coupling each wheel axle to said frame with each suspension means having a suspension pivot axis which is offset from each wheel axle such that each wheel axle is displaced relative to the suspension axis to cause the skate to turn based upon the distribution of the weight of the foot on the frame, said suspension



means including a swinging arm for each wheel, with each swinging arm being connected at one end about said wheel axle and pivotally connected at the other end about said suspension axis to said frame.

4,541,644
MANUAL UTILITY CART
Henry Diener, 71121 U.S. 131, White Pigeon, Mich. 49099
Filed Mar. 17, 1983, Ser. No. 476,035
Int. Cl.[4] B62D *1/10, 61/12*
U.S. Cl. 280—43.1 **6 Claims**

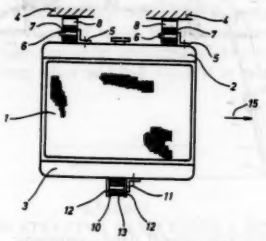


1. A manual utility cart comprising a rigid cargo carrying frame, an axle journaled at the lower end of said frame and journaling a first set of wheels to project below said frame, means for mounting a second set of wheels for pivotal movement about said axle between a position lower than said first wheels and a raised position on said frame, and means for rotating said axle and shifting said second set of wheels relative to said frist wheels and said frame betwen said lowered and raised positions, at least one set of wheels supporting a part of said frame at all times.

4,541,645
VEHICLE RADIATOR MOUNTING

Mihaly Foeldesi, Plochingen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Dec. 5, 1983, Ser. No. 558,300
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1982, 3246583
Int. Cl.⁴ B60K *11/04*
U.S. Cl. 180—68.4 **3 Claims**



1. Mounting arrangement for mounting a radiator to the bodywork of a motor vehicle comprising:

bearing journal means at an upper water box region of the radiator, said bearing journal means extending horizontally to accomodate pivoting movement of the radiator about a horizontal axis through the bearing journal means;

lower bearing means fixed to a lower water box region of the radiator; and

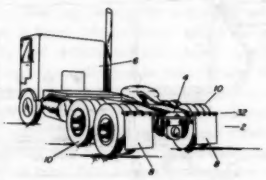
resilient retaining means interposed between the bodywork and the lower bearing means to hold the lower portion of the radiator in a normal, in-use position, said resilient retaining means being configured to automatically release the lower bearing means and permit pivoting rearward movement of the lower part of the radiator about the horizontal axis through the bearing journal means in the event of a vehicle collision,

wherein the lower bearing means includes lateral guide flanges which are spaced from one another to accomodate and guide the resilient retaining means.

4,541,646
MUD FLAP HANGER

David W. Knowley, 759 Roberta St., Salt Lake City, Utah 84111

Filed Jul. 25, 1983, Ser. No. 516,973
Int. Cl.⁴ B62D *25/16*
U.S. Cl. 280—154.5 R **12 Claims**



1. A mud flap hanger comprising:

(a) a support member having opposite sides,

(b) a housing member fixed to each side of said support member, said housing member having opposite ends and a vertically extending through aperture,

(c) a flexible polymeric bushing inserted within each end of said housing members, said bushing having a substantially square shaped aperture, at least one expansion slot located near one of the corners of said square shaped aperture and at least one lubricating groove,

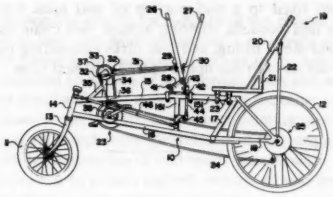
(d) a mud flap hanger means having a substantially square shaped short arm connected to a long arm to which is mounted a mud flap, said short arm being snugly held within said square shaped aperture whereby said mud flap hanger means is capable of being pivoted within said bushing while at the same time is capable of being held stationary in either a working or a stored mode, and

(e) means for substantially inhibiting axial movement of said short arm within said bushing.

4,541,647
RECUMBENT BICYCLE

Norman L. Braun, Box 718, Winkler, Manitoba, Canada (R0G 2X0)

Filed Sep. 6, 1983, Ser. No. 529,332
Int. Cl.⁴ B62M *1/12*
U.S. Cl. 280—234 **8 Claims**



7. A recumbent bicycle comprising a frame, a single front wheel mounted on said frame for pivotal steering movement, a single rear wheel mounted on said frame, a seat having a back rest allowing the occupant to lean against the back rest, a pair of pedals arranged forwardly of the seat such that the occupant can communicate reaction from the pedals into the back rest, a first chain wheel and a first drive chain communicating drive from the pedals to the rear wheel, a pair of levers extending in a generally upward direction, arranged forwardly of the seat and pivotal about a substantially horizontal axis transverse to the bicycle for manual movement forwardly and rearwardly in opposed phase, means for communicating drive from said levers to said rear wheel comprising a second chain wheel, a second chain connecting said second chain wheel to said first chain wheel, means mounting said first and second chain wheels for rotation about respective horizontal axes fixed on said frame and a pair of connecting rods each communicating force from a respective one of said levers to said second chain wheel in said opposed phase, said levers being mounted for common manually operated pivotal movement about an axis longitudinal of the bicycle and means for communicating said common pivotal movement to said front wheel for steering movement thereof, wherein said communicating means is arranged such that common pivotal movement to one side causes a steering movement of the front wheel to the other side.

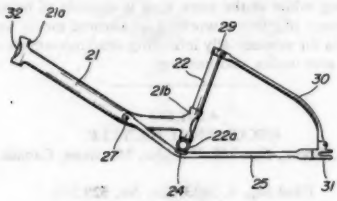
4,541,648
BICYCLE FRAME

Kikuzo Takamiya, Kitamoto, and Hiroshi Todoroki, Ageo, both of Japan, assignors to Bridgestone Cycle Co., Ltd., Tokyo, Japan

Filed Aug. 8, 1983, Ser. No. 482,965
Claims priority, application Japan, Apr. 8, 1982, 57-57346; Apr. 9, 1982, 57-50574[U]
Int. Cl.⁴ B62K *19/00*
U.S. Cl. 280—281 R **4 Claims**

1. A bicycle frame comprising a main frame including a head tube portion and an integral seat tube support portion formed of a single blank tube, a seat tube inserted in said seat tube

support portion of said main frame from its lower end, said seat tube having an integral cross-shaped lower end formed from a single blank tube by bulge-forming, two lateral expanded portions of said cross-shaped lower end being formed as a bottom bracket, a metal fitting having means for connecting to a lower expanded portion of said cross-shaped lower end of said seat



tube and chain stay supports on each side of said connecting means, two chain stays having respective front ends abutting against and fixed to a mid portion of said main frame and respective mid portions abutting against said chain stay supports of said metal fitting, and rear forks connecting rear ends of said chain stays to the upper end of said seat tube.

4,541,649

CONNECTIONS FOR TUBULAR BICYCLE FRAME AND FORK COMPONENTS AND METHOD OF MAKING THE SAME

Detmar Grünfeld, Am Brunnen 24, D-4980 Bünde, Fed. Rep. of Germany

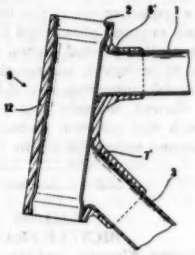
PCT No. PCT/DE82/00216, § 371 Date Jul. 12, 1983, § 102(e) Date Jul. 12, 1983, PCT Pub. No. WO83/01763, PCT Pub. Date May 26, 1983

PCT Filed Nov. 11, 1982, Ser. No. 515,054

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1981, 3145002

Int. Cl.⁴ B62K *3/04, 19/12*

U.S. Cl. 280—281 R **7 Claims**



1. A connection between at least one first tube and a second tube of a bicycle frame, said first tube having an end portion and said second tube having an outer surface; comprising a flared terminus forming part of said end portion; said flared terminus being in conforming engagement with said outer surface; and an injection-molded one-piece plastic casing fully surrounding said end portion of said first tube and fully surrounding a circumferential portion of said outer surface of said second tube in a zone of said flared terminus.

4,541,650

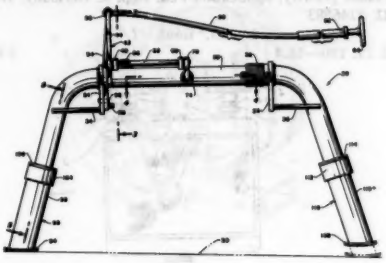
MOTORCYCLE RIDE-OFF STAND

Jack B. Cline, 12827 Bromwich St., Arleta, Calif. 91331

Filed Oct. 11, 1983, Ser. No. 540,432

Int. Cl.⁴ B62H *1/06*

U.S. Cl. 280—299 **5 Claims**



4. A motorcycle ride-off stand comprising:

a U-shaped tubular housing having an internal open ended chamber, said tubular housing defining a pair of spaced-apart leg members each having a free outer end;

a foot pad assembly being mounted to said tubular housing at said free outer end of each said leg member, each said foot pad assembly being movable a limited amount in respect to said tubular housing:

segmental structure in the form of a plurality of separate members being located in a physically abutting relationship within each said end of said chamber, said segmental structure including an elongated rigid member, said structure extending between said foot pad assemblies, whereby movement of one of said foot pad assemblies relative to said tubular housing in one direction will cause the other of said foot pad assemblies to be moved relative to said tubular housing in the opposite direction; and

a locking means mounted on said tubular housing, said locking means to be actuatable to engage with said elongated rigid member to maintain said foot pad assemblies in a pre-established position in respect to said tubular housing.

4,541,651

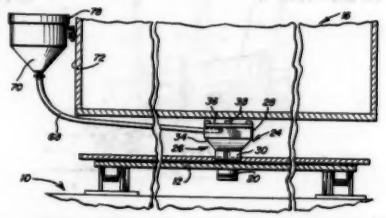
AUTOMATIC FIFTH WHEEL LUBRICATION SYSTEM

Raymond E. Koster, R.R. #1, Dorchester, Iowa 52140

Filed Jul. 12, 1984, Ser. No. 630,429

Int. Cl.⁴ B62D *53/08*

U.S. Cl. 280—433 **7 Claims**



1. In combination with a first vehicle component including a first downwardly facing bearing plate from which a hitch pin depends and a second vehicle component including a second upwardly facing bearing plate having a slot formed therein including an outer open end and a closed inner end, said pin being slidably receivable within said slot and rotatably seatable in the inner end thereof upon relative horizontal shifting of said plates into contacting load bearing superposed positions, a fifth

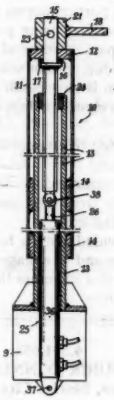
wheel lubrication system including reservoir means supported from a first side of one of said plates and including an outlet opening through said one plate, said reservoir means being adapted to contain liquid lubricant under pressure at said outlet, said outlet including a spring-biased ball valve mounted therein and shiftable between a projected position projecting a predetermined distance outward of the second side of said one plate opposing said other plate and a retracted position disposed inward of said projected position, said outlet including seal means against which said ball valve is seatable in said projected position to close said outlet and inwardly of which said ball valve is disposed when in said retracted position, whereby liquid lubricant under pressure at said outlet may pass outward therefrom when said ball valve is in said retracted position.

4,541,652

LIFTING AND STEERING DEVICE FOR A STEERING WHEEL OF A VEHICLE

Alain Deux, Angers, and Jean C. Merant, Doue la Fontaine, both of France, assignors to Braud, Angers, France

Filed Jul. 25, 1984, Ser. No. 634,222
Claims priority, application France, Aug. 29, 1983, 83 13839
Int. Cl.⁴ B62D *9/00, 7/06*
U.S. Cl. 280—672 **7 Claims**



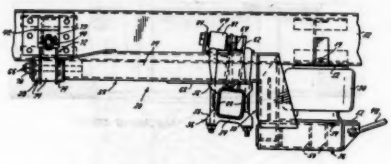
1. In a lifting and steering device for a steering wheel of a vehicle comprising a fixed tubular body which extends substantially vertically and which has one closed upper end, a second tube disposed coaxially inside said tubular body for sliding therein and projecting beyond its lower end, a wheel support fixed rigidly to the lower end of said second tube, a shaft which is mounted for rotation in the upper closed end of said main tubular body and which extends axially inside this latter and the second tube, first coupling means for coupling the upper end of said shaft to a steering control of the vehicle, a second coupling means for coupling said second tube to said shaft so as to interlock them for rotation while allowing axial movement of the second tube with respect to the shaft and a hydraulic actuating cylinder for moving said second tube axially with respect to said shaft, said hydraulic actuator is disposed inside said second tube and one of the two elements of said hydraulic actuator, namely its cylinder or its piston rod is coupled to said second tube whereas the other element of the hydraulic actuator is connected to said shaft.

4,541,653

AIR SPRING SUSPENSION WITH ANGULAR TORQUE BEAM, U-JOINT MOUNT THEREFOR, AND LATERAL GUIDES

John E. Raidel, Rte. 9, Box 400M, Springfield, Mo. 65804

Continuation-in-part of Ser. No. 431,755, Sep. 30, 1982, Pat. No. 4,465,298, which is a continuation-in-part of Ser. No. 341,474, Jan. 21, 1982, abandoned. This application Sep. 16, 1983, Ser. No. 532,852
Int. Cl.⁴ B60G *11/26*
U.S. Cl. 280—711 **31 Claims**



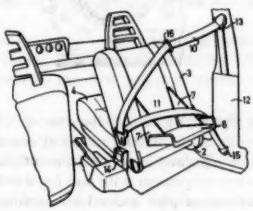
1. A suspension system for supporting the chassis of a vehicle from at least one axle comprising a relatively rigid, non-yieldable torque beam adapted to mount to the axle, a spring means mounted to an end of said torque beam and adapted to mount to the chassis, and means to mount the other end of said torque beam to the chassis, said beam mounting means having means less rigid and more yieldable than the torque beam to permit limited revolution of said beam thereabout in a longitudinal plane, and to permit limited rotation of said beam about its longitudinal axis to minimize torsional forces in the torque beam as the axle moves with respect to the chassis.

4,541,654

SAFETY BELT ARRANGEMENT IN MOTOR VEHICLES

Kjell Jonasson, Torslanda, Sweden, assignor to AB Volvo, Gothenburg, Sweden

PCT No. PCT/SE83/00196, § 371 Date Dec. 20, 1983, § 102(e) Date Dec. 20, 1983, PCT Pub. No. WO83/03978, PCT Pub. Date Nov. 24, 1983
PCT Filed May 17, 1983, Ser. No. 571,544
Claims priority, application Sweden, May 18, 1982, 8203136
Int. Cl.⁴ B60R *21/10*
U.S. Cl. 280—801 **7 Claims**

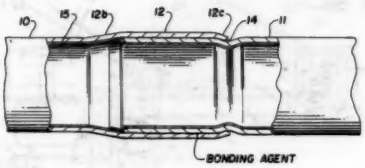


1. Safety belt arrangement in motor vehicles, in which the belt has a band portion which during use runs from a reel mechanism on one side of a vehicle seat, diagonally across the seat-back to a belt lock on the opposite side of the seat, characterized in that the belt lock (**14**) is arranged so that the belt (**10, 11**) can be disposed optionally across the front or across the back of the seat-back (**3**), and that a redirecting fitting (**16; 24**) is joined to the seat-back and serves as a guide for the diagonal band portion when it is disposed on the back of the seat-back.

4,541,655
PIPE COUPLING JOINT

John J. Hunter, 1410 Willow Pond, Abilene, Tex. 79602

Division of Ser. No. 207,787, Nov. 18, 1980, Pat. No. 4,418,458, which is a division of Ser. No. 932,178, Aug. 9, 1978, Pat. No. 4,257,155, which is a continuation of Ser. No. 708,867, Jul. 26, 1976, abandoned. This application Feb. 7, 1983, Ser. No. 464,349
Int. Cl.[4] F16L *13/14*
U.S. Cl. 285—55 5 Claims

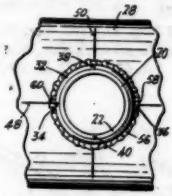


1. An interference fit joint coupling a first rigid malleable metal pipe section and a second rigid malleable metal pipe section, the end of said first pipe section telescopically inserted within the end of said second pipe section and a portion of said second pipe section surrounding said first pipe section deformed into a recess formed in the outer surface of said first pipe section by the inward deformation of said portion of said second pipe section and including a continuous plastic liner bonded to the internal surfaces of said first and second pipe sections wherein the liner bonded to the internal surface of said first pipe section extends from the end of said first pipe section and is bonded to the internal surface of said liner in said second pipe section.

4,541,656
CAST METAL OUTLET FITTING

John A. Lasko, 52 Notch Hill Rd., North Branford, Conn. 06471

Filed Aug. 12, 1982, Ser. No. 407,692
Int. Cl.[4] F16L *13/02*
U.S. Cl. 285—286 11 Claims

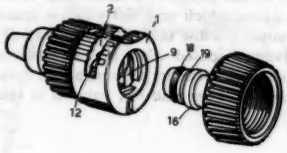


1. An outlet pipe fitting comprising a one-piece metal casting of tubular configuration, having means at one end for attachment to a branch pipe, and having a fishmouth configuration at its other end for engagement with and for welding to the side wall of a distribution pipe around an opening therein, said casting having on its exterior four axially-extending alignment marks disposed 90 degrees apart, two of which comprise parting lines that are formed during the casting process as a result of discontinuities in the inner surface of the mold, said two marks being disposed on opposite sides of the casting, said four alignment marks being adapted to be aligned with four cooperable right-angled centering lines on the distribution pipe side wall, said centering lines initially forming a cross whose center is the location for the pilot hole used by a hole saw in making the opening in the distribution pipe, said alignment effecting a centering of the casting on said opening in preparation for welding of the same to the pipe.

4,541,657
QUICK RELEASE HOSE COUPLING

Donald N. Smyth, South Plympton, Australia, assignor to SABCO Ltd., Albert Park, Australia

Filed Sep. 30, 1982, Ser. No. 430,889
Claims priority, application Australia, Nov. 26, 1981, PF1723
Int. Cl.[4] F16L *37/12*
U.S. Cl. 285—305 7 Claims

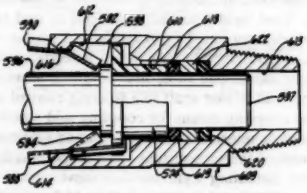


1. A hose coupling, the coupling comprising
a portion having a spigot adapted to be inserted into a socket in a second portion,
said spigot having a sealing ring and an annular groove with the sealing ring adapted to seal in the socket of the second portion,
said second portion having a transverse slot for receiving a locking member,
said locking member comprising a pair of legs attached to a part cylindrical portion, said part cylindrical portion forming a continuation of the outer surface of said second portion, a cut out portion across said second portion, said part cylindrical portion being positioned in said cut out, the ends of said part cylindrical portion abutting on the edges of said cut out, so that when the centre of the part cylindrical portion is depressed, the part cylindrical portion straightens to cause the legs to move through the slot and to diverge,
the legs being adapted to engage in said annular groove in said spigot member,
the legs being characterized in that each leg increases in dimension radially from said part cylindrical portion to the outer end of the legs,
each leg being provided with a hook on its radially outer surface at its outer end to engage a ledge formed by a cut out crossing said slot to retain the locking member in its non-engaged position.

4,541,658
SWIVELABLE QUICK CONNECTOR ASSEMBLY

Donald D. Bartholomew, Marine City, Mich., assignor to Proprietary Technology, Inc., Southfield, Mich.

Continuation-in-part of Ser. No. 360,201, Mar. 22, 1982, which is a continuation-in-part of Ser. No. 201,711, Oct. 29, 1980, Pat. No. 4,423,892. This application Dec. 12, 1983, Ser. No. 560,547
Int. Cl.[4] F16L *37/12*
U.S. Cl. 285—319 26 Claims



1. A connector assembly for providing a quick connection, comprising:
a tubular conduit adapted to convey fluid having outwardly projecting annular surface means, formed at a predeter-

mined distance from an end of said conduit to be connected, for providing a blocking wall portion disposed transversely to a central axis of said conduit;

a housing having axial bore means formed therein for receiving said conduit at a first end and for providing a fluid path at a second end, elastomeric ring means disposed in said bore means for providing a seal between said conduit and said housing,

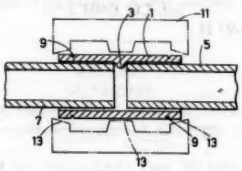
retainer means, demountably coupled to said first end of said housing, for cooperating with said blocking wall portion of said annular surface means to resist the disconnection of said conduit from said housing, said retainer means composed of a collar member and a separate latch member, said collar including a central bore permitting said conduit to pass therethrough and an outwardly projecting annular flange, said latch member including two or more extending legs, each of said legs forming radially inwardly extending tabs, said legs jointed together by a ring, said ring having an internal diameter permitting said collar to be installed onto said latch member such that said collar flange becomes trapped between said ring and said tabs.

4,541,659

PERMANENTLY SEALED THREADLESS JOINT

Matsuichi Nakamura, Osaka, Japan, assignor to Daiwa Steel Tube Industries Co., Ltd., Osaka, Japan

Filed Jul. 22, 1982, Ser. No. 401,003
Claims priority, application Japan, Oct. 1, 1981, 56-154850
Int. Cl.[4] F16L *13/14*
U.S. Cl. 285—382.2 **2 Claims**



1. A permanently sealed threadless joint connecting the end portions of a pair of tubes comprising:

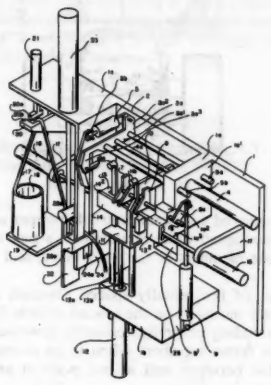
a sleeve with an opening extending therethrough and at least one protrusion extending inwardly of said opening at a middle point between the ends of said sleeve and notches on the external surfaces adjacent the ends of said sleeve, a pair of tubes each having an end telescopically received through the ends of said sleeve and positioned in abutment with the protrusion at the middle point of said sleeve with the ends of said tubes within said sleeve spaced from each other, said sleeve being characterized by having been constricted annularly only at its middle portion and at both its end portions between its end portions and its notches into engagement with the tubes and having deformed the ends of the tubes and a portion of each tube displaced from the ends of the tubes to connect and seal the end portions of said sleeve to said tubes at positions displaced from the adjacent tube ends and at the adjacent tube ends with the sleeve supporting each tube at the end of and at a postion spaced from the end of each tube.

4,541,660

AUTOMATIC MACHINE FOR BINDING PRODUCTS IN ACCORDANCE WITH A PRE-ESTABLISHED SEQUENCE

Yves Pujol, 15 rue Plantevin, 81000 Albi, France

Filed Nov. 17, 1982, Ser. No. 442,454
Claims priority, application France, Nov. 20, 1981, 81 22112
Int. Cl.[4] B65F *61/14*; B65H *69/04*
U.S. Cl. 289—2 **8 Claims**



1. An automatic machine for making "capstan knots" around casings filled with products such as sausage, bologna, or the like, wherein the casings have spaced, empty portions around which the "capstan knots" are formed, and wherein the he machine includes on a supporting frame, a knotting station; means for continuously supplying a strand of material for forming the capstan knot on the knotting station; means for continuously advancing the casings past the knotting station, and means for severing the casings through the empty portions thereof; the improvement characterized by:

means for providing a continuous length of the strand to the knotting station;

first means for gripping the strand at one location on the frame;

second means for gripping the strand at another location on the frame;

means for moving the second gripping means through the knotting station in a rectilinear direction while pulling the strand through the first gripping means to tension the strand;

means at the knotting station for displacing portions of the strand laterally of the rectilinear direction to form upstream and downstream loops, each of which has a leading and trailing leg;

means at the knotting station for displacing the upstream loop and downstream loop laterally of one another;

means for displacing the trailing leg of the upstream loop in the upstream direction to define a strand surrounded area;

means for inserting the empty portion of a severed casing into the strand surrounded area formed by the displaced strand;

means for pulling the strand to collapse the stand surrounded area about the empty portion of the casing and to tighten the strand about the empty portion to form the "capstan-knot"; and

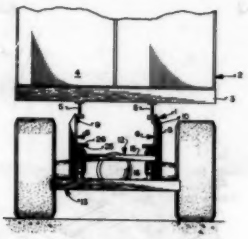
means for severing the strand after the capstan-knot is formed.

4,541,661

TRUCK BUMPER AND STEP DEVICE

Theodore L. Hawk, Rochester, Ohio, assignor to Park Poultry, Inc., Canton, Ohio

Filed Feb. 28, 1983, Ser. No. 470,304
Int. Cl.[4] B60R 19/06; B61G 11/12
U.S. Cl. 293—117 3 Claims



1. An improved combination truck bumper and step device of the type adapted to be mounted on a pair of horizontally spaced frame members of the truck body, said device including:

(a) a pair of horizontally spaced channels adapted to be pivotally mounted on the spaced vehicle frame members and extending generally vertically downwardly from said vehicle frame members when in an at-rest position and movable between said at-rest position and a retracted position;

(b) a pair of vertically spaced step members rigidly attached to and extending horizontally between the pair of spaced channels, the lowermost step of the pair extending horizontally beyond the spaced channels, with the other step of the pair being located between said channels and engageable with the spaced frame members of the truck when the channels are in retracted position with said other step providing a positive mechanical stop for the channels when in said retracted position and limiting the movement of said channels to approximately 25°; and

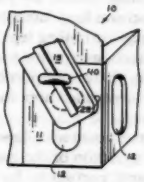
(c) a pair of fluid controlled shock absorbing members having first and second ends, said first ends being pivotally attached to the channels closely adjacent the lowermost step of the pair and the second ends being adapted to be pivotally attached to the vehicle frame members forward of the pivotal attachment of the channels to the frame member, with said shock absorbing members being placed in compression when the spaced channels move from the at-rest position to the retracted position upon the bumper and step device contacting an object to absorb the contact force therebetween.

4,541,662

LIFTING LUG FOR SHIPPING CONTAINERS

Cyrus Berg, Box 8, P.O., Elandshoek, South Africa (1208)

Filed Oct. 17, 1983, Ser. No. 542,280
Int. Cl.[4] B66C 1/66
U.S. Cl. 294—82.1 19 Claims



1. Lifting lugs for releasably locking free ends of equal length choker lines leading from a hoist, to container lift fittings having slots formed therein at corners of a shipping container, wherein each lug comprises:

an elongated bar having mounting means at one end for attachment to the free end of a choker line, and a remaining end;

a pivot shank rigidly fixed to and extending transversely from the bar at the remaining end thereof;

a keeper member rigidly fixed to the pivot shank, having a configuration complementary to the slot of a container lift fitting, spaced clear of the bar by the pivot shank;

wherein the keeper member is angularly oriented on the elongated bar such that the keeper member will be positioned transverse to the container slot as the attached choker line is drawn taut by the hoist; and

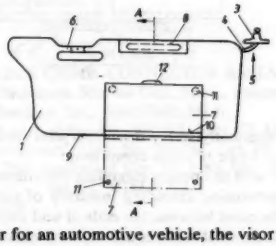
indicator means on the bar for displaying the angular orientation of the keeper member to the bar length.

4,541,663

DAZZLE REDUCING ARRANGEMENT FOR ILLUMINATED SUN VISOR, PARTICULARLY FOR AUTOMOTIVE VEHICLES

Konrad Schwanitz, Gevelsberg, and Gert Mahler, Radevormwald, both of Fed. Rep. of Germany, assignors to Gebr. Happich GmbH, Fed. Rep. of Germany

Filed May 18, 1983, Ser. No. 495,810
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1982, 3222194
Int. Cl.[4] B60J 3/02
U.S. Cl. 296—97 H 16 Claims



1. A sun visor for an automotive vehicle, the visor comprising:

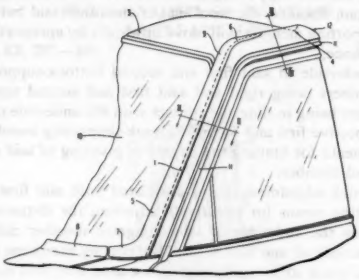
a sun visor body, a mirror supported by the body and a source of light also supported by the body; the mirror and the source of light having respective non-use positions, wherein they are relatively closer to each other; the mirror and the source of light also having respective use positions, wherein they are relatively more distant apart, and at their use positions, a viewer may view the mirror and the source of light is in position to illuminate the object being viewed; the mirror and the source of light being movable relative to each other, movement from their non-use to their use positions involving moving them relatively away from each other; the light source being located above the mirror in their use positions.

4,541,664

WATER CONDUIT FOR A LATERAL AREA OF A WINDSHIELD OF A MOTOR VEHICLE

Josef Gallitzendörfer, Sindelfingen; Hans Götz, Böblingen; Peter Pfeiffer, and Johann Tomforde, both of Sindelfingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 12, 1980, Ser. No. 186,733
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1979, 2936828
Int. Cl.[4] B60J 9/00
U.S. Cl. 296—213 10 Claims



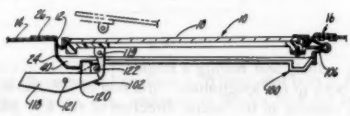
1. A water conduit for water accumulating in lateral areas of a windshield of a motor vehicle, the conduit including a main water channel disposed at a distance from and forwardly of the windshield, and a residual water channel located farther toward an outside of the windshield, characterized in that a molding means is provided for defining the main water channel, the molding means extends approximately in parallel to a longitudinal center axis of the motor vehicle without substantial deflection in a transverse direction of the motor vehicle to a trough area provided at a roof of a motor vehicle, and in that the residual water channel lies within an envelope line of a contour of the motor vehicle and extends above lateral door cutouts of the motor vehicle to a rear portion of the motor vehicle.

4,541,665

SUNROOF

David L. Draper, Hamburg, and Gerald D. McKee, Highland, both of Mich., assignors to Cars & Concepts, Inc., Brighton, Mich.

Continuation of Ser. No. 333,647, Dec. 23, 1981, abandoned. This application Oct. 25, 1984, Ser. No. 664,865
Int. Cl.[4] B60J 7/00
U.S. Cl. 296—218 16 Claims



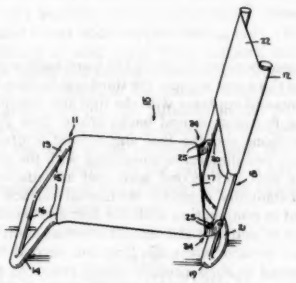
1. A vehicle sunroof comprising: an opening in a sheet metal roof panel of a vehicle, a unitary stamped metal tray formed from sheet material and having a flange supported from the top of said roof panel, said tray having an inner wall, a bottom wall, and an outer wall, said walls of the tray forming a continuous trough around the roof opening at a location below said roof panel, mounting bars secured to the outer wall of the tray and having a plurality of clamp openings spaced about the tray around the roof opening; a plurality of clamps respectively associated with the clamp openings of the mounting bars; each clamp having a lower end received within the associated clamp opening to provide mounting thereof on the tray; each clamp also having an upper end that is located below the roof panel and moved into an opposed relationship with the tray flange to cooperate with the flange in clamping the roof panel therebetween in order to secure the tray to the roof panel, a transparent panel covering said opening and being supported for swinging movement between open and closed positions with respect to the roof opening, a first seal acting between the inner wall of said tray and the perimeter of said transparent panel when the latter is in the closed position, a second seal acting between the outer wall of said tray and the perimeter of said transparent panel when the latter is in the closed position, and said perimeter of said transparent panel, said seals and said trough forming a substantially closed drainage channel to receive and accumulate moisture.

4,541,666

SAND CHAIR

Robert D. Vanderminden, Court St., Granville, N.Y. 12832

Filed Jun. 3, 1983, Ser. No. 500,872
Int. Cl.[4] A47C 4/00
U.S. Cl. 297—16 22 Claims



1. An armless chair comprising
a seat frame defining a first leg support; and
a back frame secured to said seat frame in an upright position, said back frame defining a second leg support including a transverse portion at a lower end having an intermediate section projecting away from said first leg in said upright position.

4,541,667

VEHICLE SEAT ARRANGEMENT

Sakae Ebihara; Hiroyuki Tanizaki, both of Yokohama; Kazuma Sato, Nagoya, and Yuzo Kanazawa, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited; Aichi Machine Industry Company, Limited and Ikeda Bussan Company, Limited, all of, Japan

Filed Aug. 2, 1983, Ser. No. 519,732
Claims priority, application Japan, Sep. 10, 1982, 57-157575
Int. Cl.[4] B60N 1/10
U.S. Cl. 297—64 8 Claims

1. A seat arrangement comprising:
(a) a first seat, the first seat comprising:
(a1) a first seat section, and
(a2) a first reclining back pivotally connected to the first seat section, the first back being shiftable to a predetermined position in which the first back is coplanar with the first seat section;
(b) a first armrest detachably connected to one side of said first seat;
(c) means for detachably connecting the first armrest to the first seat;
(d) a second seat spaced laterally from the first seat, the second seat comprising:
(d1) a second seat section; and

(d2) a second reclining back pivotally connected to the second seat section, the second back being shiftable to a predetermined position in which the second back is coplanar with the second seat section;

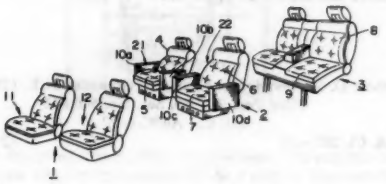
(e) a second armrest detachably connected to the side of said second seat which is adjacent said first seat and said first armrest;

(f) means for detachably connecting the second armrest to the second seat;

(g) a third seat spaced longitudinally from the laterally arranged first and second seats, the third seat comprising:

(g1) a third seat section; and

(g2) a third reclining back pivotally connected to the third seat section, the third back being shiftable to a predetermined position in which the third back is coplanar with the third seat section, the third seat section being contiguous and coplanar with the first and second backs when the first and second backs are in their predetermined positions and the first and second armrests having at least one dimension coinciding with the space between the first and second seats and are adapted to form a substantially coplanar horizontal surface intermediate and in conjunction with the first and second seats with one of said first and second armrests abutting said third seat section when the first and second backs are arranged in their predetermined positions and the armrests are detached from the respective seats and inserted in the space.



4,541,668

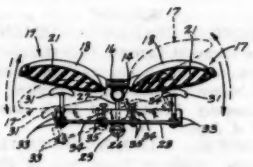
CYCLE SEAT

William Rouw, 223 Carson St., Pella, Iowa 50219

Filed Jun. 8, 1984, Ser. No. 618,689

Int. Cl.⁴ B62J *1/00*

U.S. Cl. 297—201 **6 Claims**



1. A bicycle or tricycle seat comprising:

a housing adapted to be attached to a bicycle;

a first buttock-supporting member having a front end and a rear end thereof;

means for operably pivotally attaching said rear end of first buttock-supporting member to said housing along a substantially horizontal axis;

a second buttock-supporting member having a front end and a rear end thereof;

means for operably pivotally attaching said rear end of said second buttock-supporting member to said housing along a substantially horizontal axis;

coordinating means for supporting bottom portions of said first and second buttock-supporting member forwardly of said horizontal axes, said coordinating member comprising an elongated member pivotally attached intermediate the ends thereof along a substantially horizontal axis which is disposed generally transversely to and lower than said other horizontal axes, first support means disposed toward one end of said elongated member for supporting said bottom portion of said first buttock-supporting member, and second support means disposed toward the other end of said elongated member for supporting said bottom portion of the other of said second buttock-supporting member whereby when the front end of one of said buttock-supporting member moves downwardly by a certain distance, the front end of the other said buttock-supporting member will move upwardly by aproportional distance;

the underside of said first and second buttock-supporting members being rigid and said first and second support means being in slideable contact with the underside of the respective first and second buttock-supporting members;

stop means for limiting the degree of pivoting of said elongated member;

first pitch adjustment means associated with said first supporting means for selectively adjusting the distance between the underside of said elongated member and the underside of said first buttock-supporting members; and

second pitch adjustment means associated with said second supporting means for selectively adjusting the distance between said elongated member and the underside of said second buttock-supporting member.

4,541,669

VEHICLE SEAT HAVING AN ADJUSTABLE THIGH SUPPORTS

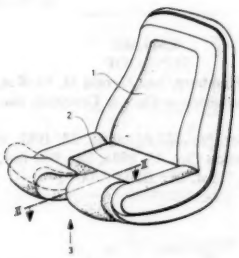
Walther Göldner, Denkendorf, Fed. Rep. of Germany, assignor to Keiper Recaro GmbH & Co., Fed. Rep. of Germany

Filed Jul. 13, 1983, Ser. No. 513,320

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1982, 3226101

Int. Cl.⁴ A47C *7/50*

U.S. Cl. 297—284 **20 Claims**



1. A vehicle seat having a thigh support which can be adjusted both in the longitudinal direction of the seat and about an axis running in the lateral direction of the seat and can be locked in selectable pivot positions relative to a rear section of the seat which also has a back rest, further comprising:

at least two bars rigidly connected with a frame of the rear section of the seat;

a support device arranged on the two bars so as to be longitudinally movable and capable of being locked in selectable positions;

an upholstery support body of the thigh support pivotably mounted on the support device;

an upholstery element mounted on the upholstery support body; and

a detent means, provided between the upholstery support

body, and the support device for locking the upholstery support body in the selectable pivot positions;

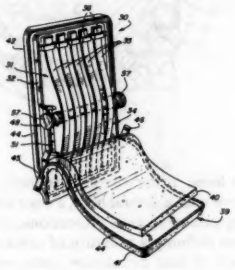
said upholstery support body being disposed as to encase the support device and detent means.

4,541,670

LUMBOSACRAL BACKREST WITH ADJUSTABLE CONTOUR

Robin Morgenstern, Chicago, Ill., and Edward W. Osann, Jr., Chesterton, Ind., assignors to Robin Morgenstern, Chicago, Ill.

Filed Aug. 15, 1983, Ser. No. 523,660
Int. Cl.⁴ A47C *3/00*
U.S. Cl. 297—284 **18 Claims**



1. A lumbosacral backrest for use with chairs, beds and other furniture, vehicle seats, and wheelchairs, comprising, in combination:

(a) an upstanding foundation frame having a pair of side edge portions and a pair of end edge portions;

(b) a flexible back support fastened to said foundation frame in outwardly bowed relation therewith;

(c) a regulator spindle having a longitudinal cross-section of double concave form, and said flexible back support conforming to that form, disposed transversely of said foundation frame and said flexible back support and interposed therebetween to provide a transverse plane of rigidity across said back support;

(d) means situated adjacent to but inboard of said side edge portions journaling said regulator spindle for rotational movement longitudinally of the bow in said flexible back support; and

(e) means for adjustably positioning said regulator spindle in any selected position within its range of rotational movement longitudinally of said bow to define and locate said transverse plane of rigidity across said back support at such selected position and thereby effect an adjustment in the contour of said back support.

4,541,671

PATIENT SUPPORT

James H. Broadhead; Lawrence A. Wilbur, and Ivan E. Sams, all of Bay Minette, Ala., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Nov. 5, 1982, Ser. No. 439,657
Int. Cl.⁴ A47C *1/02*
U.S. Cl. 297—330 **15 Claims**

1. A patient support, for supporting a patient thereon, and reclinable between a fully upright position and a reclined position, comprising:

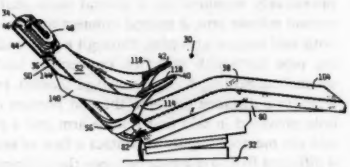
a base;

a unitary lower body support, for supporting the lower body and legs of the patient, tiltably connected at a rear end thereof to said base;

a unitary upper body support, for supporting the upper body of the patient, pivotally connected to said lower body support at a pair of pivotal connection points disposed on either side of said lower and upper body supports upwardly of said rear end of said lower body support and forwardly of a lower end of said upper body support, an axis between said pivotal connection points approximating an axis between the hip joints of the patient;

a pair of arm supports, for supporting the arms of the patient, each arm support being pivotally connected at one of said pair of pivotal connection points;

a head support, for supporting the head of the patient, slidably mounted on an upper end of said upper body support; and



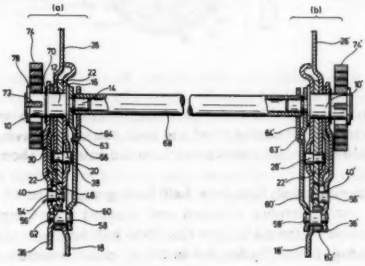
linkage means using a single drive means for reclining said upper body support while simultaneously raising a front end of said lower body support during only a first part of the reclining of said upper body support, said simultaneous reclining and raising acting to advance the redistribution of the weight of the patient from being directed downwardly through the buttocks in the fully upright position to being directed downwardly through the chest through the back in the reclined position, thereby maintaining the oral cavity of the patient in a fixed position with respect to said head support for the entire reclining range of said patient support.

4,541,672

RECLINING ANGLE ADJUSTMENT DEVICE

Kinsho Fukuta, Toyota, and Makoto Kanamaru, Fujisawa, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi and Shiroki Kinzoku Kogyo Kabushiki Kaisha, Kanagawa, both of, Japan

Filed Dec. 20, 1982, Ser. No. 451,001
Claims priority, application Japan, Dec. 21, 1981, 56-191389
Int. Cl.⁴ A47C *1/026*
U.S. Cl. 297—367 **6 Claims**



1. A reclining angle adjustment device comprising:

a first locking mechanism including a first upper arm provided at one side of a seat, a first lower arm rotatably mounted on a main shaft with said first upper arm, a first rack fixed to said first upper arm, a first pawl member mounted on said first lower arm and a first release arm with a cam hole into which a pin member mounted on said first pawl member enters for disengaging said first pawl member with said first rack;

a second locking mechanism including a second upper arm provided at the other side of said seat, a second lower arm rotatably mounted on said main shaft with said second

upper arm, a second rack fixed to said second upper arm, a second pawl member mounted on said second lower arm and a second release arm with a cam hole into which a pin member mounted on said second pawl member enters for disengaging said second pawl member with said second rack; and

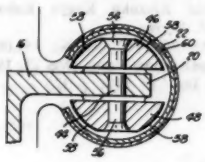
connecting means for transferring the movement between said first and second locking mechanisms including a first arm plate operatively mounted on a first main shaft with said release arm, a first connecting hook connected with said first arm plate through a play, a second arm plate operatively mounted on a second main shaft with said second release arm, a second connecting hook connected with said second arm plate through a play and a connecting pipe on which said first connecting hook and said second connecting hook are affixed thereto, respectively, wherein a distance between the end portion of said cam hole provided in said first release arm and a point where said pin member begins to contact a face of said cam hole is different from a distance between the end portion of said cam hole provided in said second release arm, and a point where said pin member begns to contact a face of said cam hole and the difference in both distances corresponds to a quantity of play provided between the arm plate and connecting hook.

4,541,673

REMOVABLE SLIDER SHOE FOR A TRANSLATING SLEEVE USED ON A JET ENGINE COWL AND DUCT

Alfred H. Greiert, Wichita, Kans., assignor to The Boeing Company, Seattle, Wash.

Filed May 19, 1983, Ser. No. 496,098
Int. Cl.[4] F16C *29/02*
U.S. Cl. 308—3 R **2 Claims**



1. A removable slider shoe for mounting on a translating device of a jet engine cowl and duct, the sleeve having a slider which moves in a circular track on the cowl, the shoe comprising:

an elongated first shoe half having a portion of its outer circumference rounded and adapted for receipt on one side of the slider, the first shoe half having a plurality of lugs integrally formed in the inner circumference thereof and extending outwardly therefrom, the lugs adapted for receipt in slots along the length of the slider;

an elongated second shoe half having a portion of its outer circumference rounded and adapted for receipt on the opposite side of the slider, the second shoe half having a plurality of lugs integrally formed in the inner circumference thereof and extending outwardly therefrom, the lugs adapted for receipt in slots along the length of the slider, the lugs of the first and second shoe halves transmitting fore and aft loads from the shoe halves to the slider; and

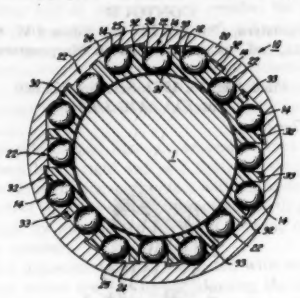
a plurality of apertures through the shoe halves and the slider for receiving fasteners therethrough and securing the shoe halves to the sides of the slider.

4,541,674

LINEAR MOTION ROLLER BEARING

William Mitschang, 7 Rose St., Glen Head, N.Y. 11545

Filed Feb. 24, 1984, Ser. No. 583,525
Int. Cl.[4] F16C *29/06, 29/04*
U.S. Cl. 308—6 C **4 Claims**



1. In a linear roller bearing assembly having a cylindrical outer sleeve with a central bore, a cage within said bore having outwardly extending axial projections, said bore and said cage projections defining a plurality of continuous ball circulation paths, each of said circulation paths comprising an axially-extending load-bearing channel in said bore, an axially-extending non-loaded return channel laterally adjacent said load-bearing channel, and two semi-circular channels interconnecting said load-bearing channel and said return channel, and load-carrying balls which are guided in said continuous ball circulation paths, the improvement comprising:

said cylindrical outer sleeve comprising a unitary cylindrical outer sleeve having axially-extending load-carrying flat lands, extending radially inwardly of said outer sleeve, each said flat land forming a part of a respective load-bearing channel, and accompanying return channel grooves, each said return channel groove forming a part of a respective non-loaded return channel, each said return channel groove having a substantially flat deformation lying outwardly of and extending laterally from and substantially parallel with a respective land and being blended with a curved ball-conforming shape along the axial length thereof laterally outwardly of said respective land, whereby guidance is provided to said balls through said return channel, said cage comprising a unitary cage within said outer sleeve, said outwardly extending axial projections of said cage being spaced from each other a distance and having outwardly extending lengths so that a respective load-carrying land is straddled between one said axial projection separating laterally adjacent load-bearing and non-loaded return channels of a respective circulation path and another said axial projection forming a lateral outer wall of said load-bearing channel of said circulation path, with some play, said projections forming at their axially extending inner portions load-carrying axially extending depressions and non-loaded axially-extending depressions, each said load-carrying depression being located directly opposite a respective land and having an opening in the axial direction for bearing of said load-carrying balls on a loaded surface and said respective land, and each of said non-loaded axially-extending depressions being formed so that it is located directly opposite a respective return channel groove, the laterally outward side thereof being curved along the same curvature as the ball conforming shape of a respective laterally outward axial length of a respective return channel groove.

4,541,675

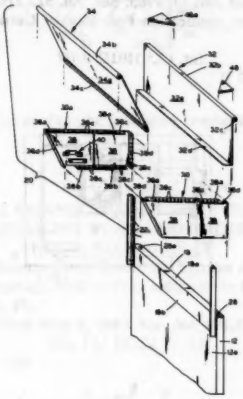
DISPLAY CANOPY

Lynn E. Everett, New Philadelphia, Ohio, assignor to Tusco Manufacturing Co., Gnadenhutten, Ohio

Continuation-in-part of Ser. No. 285,542, Jul. 21, 1981, abandoned. This application Jul. 5, 1983, Ser. No. 510,628

Int. Cl.⁴ A47B *45/00*

U.S. Cl. 312—257 R **10 Claims**



1. A canopy for installation on a product display gondola having a bottom shelf and a back panel extending vertically upward from the rear side of the bottom shelf, said canopy comprising:

(a) an elongate L-shaped section mounting means including two flange portions extending perpendicularly to each other attached to the top horizontally extending marginal edge of the back panel and having one flange portion extending along the length of the top marginal edge of the back panel fixedly attached thereto;

(b) a header assembly disposed above the display gondola and comprising a rear panel, a front panel, and two end panels which are interconnected to form a ring-like structure;

(c) means for attaching the rear edges of said end panels to the other flange portion of said L-shaped section mounting means; and

(d) means for supporting the opposite ends of said end panels from the bottom shelf of the display gondola.

4,541,676

CHIP CARRIER TEST ADAPTER

William D. Hansen, Bell Gardens, and Raymond F. Mix, Pomona, both of Calif., assignors to ITT Corporation, New York, N.Y.

Filed Mar. 19, 1984, Ser. No. 591,149

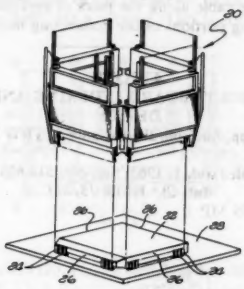
Int. Cl.⁴ H01R *13/627, 23/72*

U.S. Cl. 339—17 CF **17 Claims**

1. A test adapter for a chip carrier having leads along the four side edges of the insulative body of the carrier and mounted on a printed circuit board comprising:

a rectangular housing containing a plurality of test contacts arranged in a pattern to engage exterior portions of said chip carrier leads which extend between the carrier body and the printed circuit board along said four side edges when said housing is mounted over said carrier; and

latching means mounted on at least two diagonally opposed corners of said housing adapted to engage the underside of said carrier body at the corners thereof and between the



carrier body and the printed circuit board to retain the test adapter on the carrier.

4,541,677

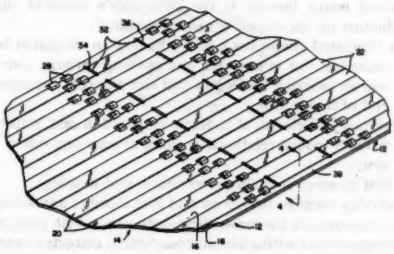
CONTINUOUS STRIP OF JUMPER CABLE ASSEMBLIES

Thomas D. Logan, Concord, and David A. Wedell, Winston-Salem, both of N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 477,997, Mar. 23, 1983, abandoned. This application Aug. 7, 1984, Ser. No. 638,835

Int. Cl.⁴ A01R *11/00*

U.S. Cl. 339—17 F **16 Claims**



1. A continuous strip of jumper cable assemblies, each assembly being comprised of a length of cable having a plurality of insulated electrical conductors therein, with each conductor having a first end with a first connecting means thereon, an intermediate portion and a second end with a second connecting means thereon, each connecting means having an attaching portion and a mating portion, the strip being characterized in that:

the cable has a plurality of closely spaced apart parallel pairs of perforation lines, each pair of perforation lines being separated from the next pair of lines by the desired jumper cable length,

the perforation lines traverse the strip in a direction essentially normal to that of the conductors, each pair of perforation lines marking the end of one and the beginning of another jumper cable assembly,

the strip further has a plurality of spaced apart connecting means attached to each conductor, the connecting means being attached to the cable in essentially parallel lines proximate to the perforation lines so that the perforation lines are above the mating portions of the connecting means and the mating portions of the connecting means along one of each pair of perforation lines face the mating

portions of the connector means along the second of each pair of perforation lines whereby,

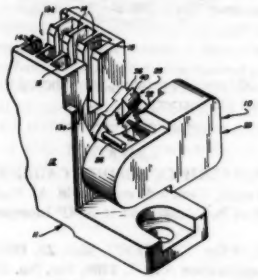
the individual jumper assemblies can be removed from the strip by severing the cable along the pairs of perforation lines beneath the mating portions of the connecting means.

4,541,678

PRINTED CIRCUIT BOARD INDEXING AND LOCKING DEVICE

Robert E. Lumpp, Addison, Ill., assignor to TRW Inc., Redondo Beach, Calif.

Filed Jul. 1, 1983, Ser. No. 510,605
Int. Cl.⁴ H01R *13/631*
U.S. Cl. 339—75 MP **10 Claims**



1. A zero-insertion-force connector for indexing and locking a circuit board therein as the connector's contacts engage conductors on the circuit board comprising:

an elongated connector housing having an elongated board receiving slot in one side and opening through one end, and an indexing surface in said slot adjacent the opposite end of said housing;

a plurality of electrical contacts mounted in said housing in parallel spaced relationship along at least one side of said slot;

a first member rotatably mounted in said housing;

a driving member driven by said first member and acting on said contacts to move them between a first position in engagement with a circuit board and a retracted position;

a spring member disposed at the end of said housing opposite said one end, engaging said first member and urging it towards said opposite end;

an activating member fixedly attached to said first member at said one end of said housing and adapted for rotational movement therewith, said activating member having first and second driving surfaces;

a pin mounted in said housing, and extending adjacent said activating member;

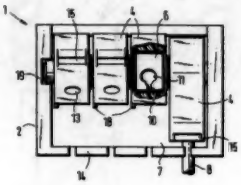
a locating member rotatably mounted on said pin, said locating member having first and second engaging surfaces and a presser surface, said first engaging surface disposed to be engaged by said first driving surface of said activating member to position said presser surface in alignment with said slot at said one end of said housing and move said presser surface toward said opposite end of said housing upon rotation of said activating member from a first to a second position, said second engaging surface disposed to be engaged by said second driving surface of said activating member for retraction of said locating member from said slot upon rotation of said activating member from said second to said first position, whereby said presser surface is disposed to engage and press inwardly on a circuit board in said board receiving slot upon rotation of said activating member from said first to said second position to insure seating of said board against said indexing surface and registration of said conductors and said contacts.

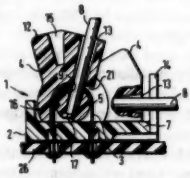
4,541,679

ELECTRICAL CONNECTOR STRIP

Karl E. Fiedler, Korntal, and Helmut Fuchs, Halver, both of, Fed. Rep. of Germany, assignors to Karl Lumberg GmbH & Co., Schalksmuhle, Fed. Rep. of Germany

Filed Jul. 13, 1983, Ser. No. 513,216
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1982, 3226128
Int. Cl.⁴ H01R *9/08*
U.S. Cl. 339—97 P **20 Claims**





1. A connector comprising:

a housing;

at least one swivel member journaled on said housing and rotatable about a pivot axis, said swivel member having an insertion hole adapted to receive an electrical conductor; and

a contact member provided with a cutting and clamping slot lying in a common plane with said hole, said plane being perpendicular to said axis, whereby rotation of said swivel member upon insertion of a conductor into said hole entrains said conductor into said slot to mechanically lock said conductor to said contact member and effect electrical connection between said conductor and said contact member, said swivel member being retained on said housing by said contact member.

4,541,680

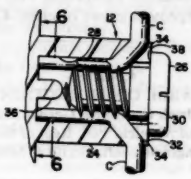
ELECTRICAL CONNECTOR ASSEMBLY

James J. Johnston, Old Saybrook, Conn., assignor to Brand-Rex Company, Willimantic, Conn.

Filed Aug. 2, 1984, Ser. No. 637,144
Int. Cl.⁴ H01R *13/39*
U.S. Cl. 339—98 **16 Claims**

1. A connector assembly comprising a connector body having an axially extending bore, at least a portion of said bore having a non-circular cross-section, and means for electrically connecting end portions of a plurality of insulated electrical conductors disposed within said bore portion and extending in the general direction of bore extent and including a single threaded member having a sharp-edged helical thread and sized to cooperate with said bore portion and cut into and displace insulation on the terminal ends of a plurality of indi-

vidual electrical conductors disposed within said bore portion to establish a plurality of electrical contacts with each of the



conductors and anchor the insulated conductors within said bore.

4,541,681

ELECTRICAL CONNECTION OF WIRE CONDUCTOR(S) TO A TERMINAL PIN IN AN ELECTRODE ASSEMBLY OF A PACING LEAD

Frederick S. Dorman, Boca Raton, and Charles A. Peers-Trevarton, Coral Springs, both of Fla., assignors to Cordis Corporation, Miami, Fla.

Filed May 4, 1983, Ser. No. 491,401
Int. Cl.⁴ H01R *11/18*
U.S. Cl. 339—100 **13 Claims**

1. An electrical connection of an electrode assembly to an end of a pacing lead, said electrode assembly comprising an electrode having a terminal pin, said lead comprising at least two coiled wire conductors with bared end portions thereof being coiled in a spiral formation with a predetermined pitch and a predetermined axial spacing between adjacent groups of turns of coiled conductors and being received on said terminal pin and said pin having a spiral, thread-like formation including a spiral groove and a spiral ridge thereon with a pitch equal to said predetermined pitch and a spacing between axially spaced portions of said spiral groove equal to said predetermined spacing and onto which said bared wire conductor end portions are threaded to form a secure and good mechanical electical connection between said terminal pin and said bared wire conductor end portions.

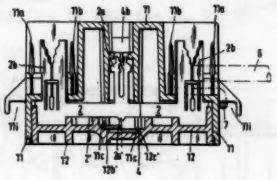
4,541,682

CONNECTOR BLOCK WITH SOLDERLESS, NON-SCREWED AND STRIPPING-FREE TERMINALS HAVING A POLYTROPIC AIR GAP FOR TERMINATING COMMUNICATION CABLES AND DROPWIRE CABLES

Dieter Gerke; Manfred Müller; Peter Zytowski, and Wolfgang Radelow, all of Berlin, Fed. Rep. of Germany, assignors to Krone GmbH, Berlin, Fed. Rep. of Germany

Filed Jul. 18, 1984, Ser. No. 632,210
Claims priority, application Fed. Rep. of Germany, Apr. 25, 1984, 3415369
Int. Cl.⁴ H01R *13/53*
U.S. Cl. 339—111 **12 Claims**

1. A connector block with solderless, non-screwed and stripping-free terminals having a polytropic air gap for terminating communication cables, comprising a housing upper half and a housing lower half, characterized in that the connector block (**1**) receives angular pairs of terminal elements (**2, 3**) respectively rotated about 180° in separate receptacles (**13**) of the housing upper half (**11**) and the housing lower half (**11**) in plugged-in relationship, that each of said terminal elements (**2, 3**) in addition to a terminal contact (**2*b*, 3*b***) includes a centre contact (**2*a*, 3*a***) with a semi-circular extension (**2*a'***) integrally formed therewith on the underside (**2'**) thereof, that centrally of the longitudinal axis of the connector block (**1**) within the housing lower half (**11**) a groove (**12*a***) is formed including



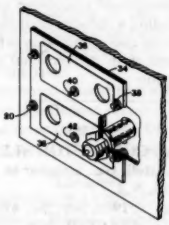
plural receptacles (**12*b*, 12*c***) formed with two different stepped shoulders (**12*b'*, 12*c'***), that an earth bar (**4**) rotatable about 180° is adapted to be inserted into said groove (**12*a***) at two different levels, and that the earth bar (**4**) is formed with tabs (**4*a***) engaging in said receptacles (**12*b*, 12*c***).

4,541,683

DEVICE FOR MOUNTING AN ELECTRICAL CONNECTOR TO A CONDUCTIVE PANEL

Joseph D. Van Domelen, Aloha, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Nov. 21, 1983, Ser. No. 553,617
Int. Cl.⁴ H01R *13/518*
U.S. Cl. 339—126 R **6 Claims**



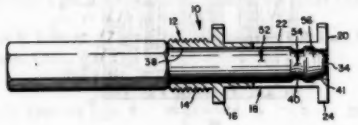
1. In combination, an electrical connector having an electrically conductive exterior portion, and a device for mounting the electrical connector to a panel of conductive material formed with an aperture which is sufficiently large to enable the connector to be disposed therein without said exterior portion contacting the panel, said device comprising a board of dielectric material having first and second main faces and formed with an opening in which which said connector can be fitted, the board being secured in use to the panel with the first main face of the board contacting the panel and so that a connector fitted in the opening of the board extends in the aperture of the panel without contacting the panel, and the device further comprising a layer of electrically conductive material on the second main face of the board and surrounding the opening therein, so as to enter into electrically-conductive contact with said exterior portion of the connector when the connector is fitted in said opening, and an electrically-conductive member for selectively connecting the layer of conductive material to the conductive panel, said layer of electrically conductive material covering a restricted area of the second main face of the board and leaving at least one portion of said second main face uncovered, so that electrically-conductive fastening means that are in electrically-conductive contact with the panel and pass through the board by way of said one portion may be used to secure the board to the panel without establishing an electrically-conductive connection between the panel and the layer.

4,541,684

AIRCRAFT GROUNDING RECEPTACLE

Howard E. Holman, and Roy D. Turner, both of Fort Worth, Tex., assignors to T. J. Electronics, Inc., Arlington, Tex.

Filed Feb. 16, 1983, Ser. No. 466,915
Int. Cl.[4] H01R 4/66
U.S. Cl. 339—14 L 6 Claims



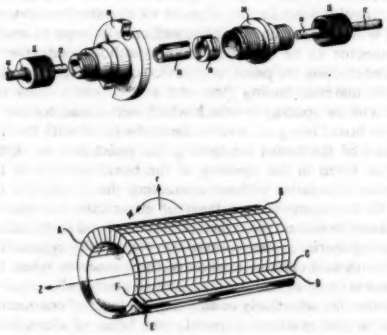
1. An aircraft grounding receptacle comprising:
a unitary body of electrically conductive material;
said body of electrically conductive material having a first end comprising a connector portion;
said body of electrically conductive material having a second end comprising a tubular portion;
said tubular portion comprising a relatively small diameter portion extending from the connector portion and a relatively large diameter flange situated at said end of the body said flange extending perpendicularly to the tubular portion and comprising a substantial mass relative thereto;
said flange and said tubular portion being separated into segments by a plurality of slots extending into the body from said second end thereof toward the connector portion;
said body of electrically conductive material having a bore therethrough dimensioned to receive an aircraft grounding plug and including a reduced diameter portion situated adjacent said second end of the body which is adapted for mating engagement with the terminal groove of the aircraft grounding plug.

4,541,685

OPTICAL CONNECTOR SLEEVE

Jerry M. Anderson, Austell, Ga., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 7, 1983, Ser. No. 472,849
Int. Cl.[4] G02B 7/26
U.S. Cl. 350—96.21 9 Claims



4. An improved split sleeve adapted for use with cylindrical optical plugs
characterized in that
said improved sleeve has a varying wall thickness around its circumference, with said thickness being substantially less in the vicinity of the split than the thickness opposite said split, whereby the inner surface of said sleeve maintains a substantially circular shape when two cylindrical plugs are inserted therein.

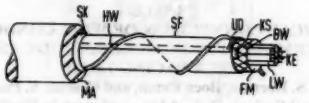
9. An optical connector comprising two cylindrical plugs inserted into the improved sleeve of claim 4.

4,541,686

CABLE CONSTRUCTION

Jüergen Barfuss; Ulrich Oestreich; Gernot Schoeber, and Wolfgang Schrey, all of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 25, 1983, Ser. No. 488,444
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1982, 3216233
Int. Cl.[4] G02B 5/16; H01B 7/18
U.S. Cl. 350—96.23 17 Claims



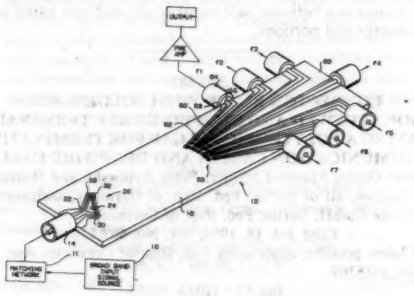
1. In a cable, particularly an optical waveguide cable, having a cable core with a filling compound to produce longitudinal tightness, a barrier film surrounding the cable core and an outer sheath surrounding the barrier film, the improvements comprising an armor layer being composed of stranded material being interposed between the cable core and the barrier film and an adhesive material being disposed on an inner surface of the barrier film only in some sub-areas of the inner surface to form an adhesion between the armor layer and the barrier film only in the sub-areas while the remaining areas of the inner surface are free of the adhesive material and a connection to the armor layer.

4,541,687

SIGNAL PROCESSING SYSTEM AND METHOD

Robert E. Brooks, Manhattan Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Sep. 2, 1983, Ser. No. 529,066
Int. Cl.[4] G02F 2/00
U.S. Cl. 350—162.12 36 Claims



1. A system for processing of multifrequency input signals to provide a Fourier transform output comprising:
means defining a wave propagating medium;
an input array including a number of input transducers coupled to the propagating medium;
each of said input transducers being responsive to the input signals;

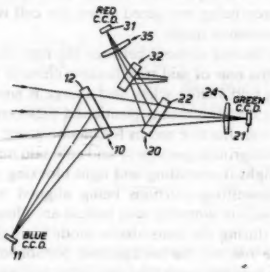
said input transducers generating coherent waves launched toward a spaced apart focal region;
said input transducers being spaced along the medium to form composite wavefronts;
said composite wavefronts focused at frequency dependent locations in the focal region; and
a number of output transducers disposed along the focal region;
said output transducers responsive to the composite wavefronts propagated toward them, such that excitation of an output transducer represents one range of frequency components of the input signals.

4,541,688

OPTICAL BEAM SPLITTERS

Peter B. Watt, Welwyn, and Richard A. Sharman, Houghton Regis, both of England, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 11, 1984, Ser. No. 619,454
Int. Cl.[4] G02B *27/10, 17/00*
U.S. Cl. 350—171 **3 Claims**



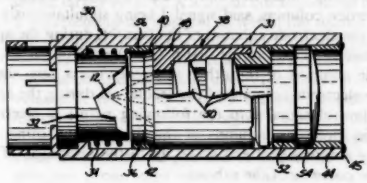
1. A beam splitter for separating three colored light beams from a light beam having the image content of an original, each of such colored light beams being adapted to illuminate a respective CCD array, comprising:
(a) a first transparent support having a first dichroic mirror mounted thereon and arranged so that the first mirror reflects the first colored light beam and the first support transmits the remaining colored beams and induces coma and chromatic aberration in such transmitted beams;
(b) a second transparent support having a second dichroic mirror mounted thereon and arranged so that the second mirror reflects the second colored light beam and the second support transmits the third colored light beam and induces an equal and opposite amount of coma and chromatic aberration in the third light beam to that induced in such third light beam by the first support;
(c) a transparent plate arranged to transmit the second beam and induce an equal and opposite amount of coma and chromatic aberration in the second light beam to that induced in such second light beam by the first support; and
(d) the first and second transparent supports and the transparent plate being selected to be sufficiently thick, so that ghost images caused by internal support and plate reflections are imaged at locations remote from the CCD arrays.

4,541,689

FRICTION WEDGE ALIGNMENT SYSTEM FOR LASER DIODE COLLIMATOR PENS

P. Guy Howard, and Roeland M. T. Hekker, both of Colorado Springs, Colo., assignors to Optical Storage International, Minneapolis, Minn.

Filed Sep. 19, 1983, Ser. No. 533,395
Int. Cl.[4] G02B *7/02*
U.S. Cl. 350—255 **2 Claims**



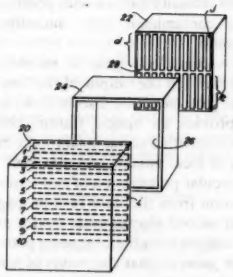
1. A laser light pen objective lens alignment apparatus comprising:
a cylindrical pen body;
an objective lens housing body having a tapered end slidably mounted in said pen body;
means for limiting the freedom of movement of said objective lens housing body in a first direction;
a ring, having a tapered end adapted to mate with the tapered end of said housing body, slidably mounted in said housing body and further adapted to expand and press against the interior surface of said pen body when the tapered ends of said ring and said housing body are mated under force to create a friction force tending to maintain the position of the ring;
a spring fixedly mounted in said pen body and abutting said ring and having a sufficient restoring force to move the ring against the resistance of said frictional force.

4,541,690

MATRIX DISPLAY CONTROL PROCESS

Jean F. Clerc, Meylau, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Aug. 18, 1983, Ser. No. 524,232
Claims priority, application France, Aug. 26, 1982, 82 14644
Int. Cl.[4] G02F *1/13*
U.S. Cl. 350—333 **4 Claims**



1. A control process for a matrix display comprising a material, whereof an optical property is to be modified, said material being placed between a first group of p parallel electrode rows and a second group of q parallel electrode columns, the rows and columns crossing one another, an area ij of the material being defined by the region of the material covered by row

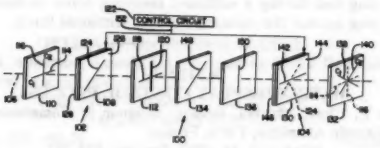
i, in which i is an integer such that $1 \leqq i \leqq p$, and by the column j, in which j is an integer such that $1 \leqq j \leqq q$, the rows and columns being used for carrying signals bringing about an excitation of the material, wherein the electrode columns have n horizontal gaps defining n+1 identical sets of electrode columns, a signal I is applied to electrode row i, whilst a zero signal is applied to the other electrode rows, the signal I being sequentially applied to the p electrode rows in accordance with increasing values of i, and wherein a signal J is applied to the electrode columns, said signal J being simultaneously applied to the electrode columns of the first set, during the application time of signal I to the first p/(n+1) electrode rows, the electrode columns of the other sets receiving a zero signal, then the electrode columns of the second set during the application time of signal I, to the following p/(n+1) electrode rows, the electrode columns of the first set and other sets receiving a zero signal and so on up to the excitation of the electrode columns of the nth set.

4,541,691

ELECTRO-OPTIC SWITCHING SYSTEM USING CIRCULARLY POLARIZED LIGHT

Thomas S. Buzak, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Dec. 27, 1983, Ser. No. 565,441
Int. Cl.⁴ G02F *1/01, 1/133*
U.S. Cl. 350—335 **12 Claims**



1. In an optical switching system in optical communication with a source of light rays and comprising a first light gate which includes a first electro-optic device means and provides an optical transmission state having associated therewith a contaminant light intensity pattern with points of local minima and maxima, a contaminant light intensity compensation method comprising:

positioning a second light gate to receive the light rays transmitted through the output of the first light gate, the second light gate including a second electro-optic device means to provide an optical transmission state having associated therewith a contaminant light intensity pattern with points of local minima and maxima;

introducing circular polarization of and removing the circular polarization from the light rays propagating between the first and second electro-optic device means; and

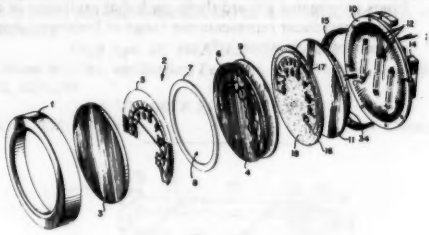
orienting the contaminant light intensity patterns of first and second light gates so that the points of local minima and maxima of the contaminant light intensity pattern of one of the light gates generally align with the respective points of local maxima and minima of the contaminant light intensity pattern of the other light gate, thereby to provide independent of viewing angle an optical transmission state of substantially contaminant-free light in a system whose transmissivity remains essentially constant at its maximum value.

4,541,692

TRANSFLECTIVE LIQUID CRYSTAL DISPLAY WITH ENHANCED CONTRAST RATIO

Robert P. Collins, Boxford, Mass.; Elias S. Haim, Windham, N.H., and John A. Rowen, Lynnfield, Mass., assignors to General Electric Company, Schenectady, N.Y.

Filed May 31, 1983, Ser. No. 499,572
Int. Cl.⁴ G02F *1/13*
U.S. Cl. 350—339 R **6 Claims**



1. A transflective liquid crystal display operable in transmissive and reflective modes with enhanced contrast ratio in the transmissive mode between the display indicia and the background portions comprising:

(a) A single liquid crystal cell with display indicia,

(b) A light source positioned to the rear of the single cell, said source being energized when the cell is operated in the transmissive mode

(c) A transflective element between the rear of cell and said source, the rear of said transflective element being illuminated by said source when said source is energized,

(d) Passive masking means positioned between said source and the transflective means for blocking rear illumination of the background portion of said cell, said masking means having light transmitting and light blocking portions, the light transmitting portions being aligned with the cell display indicia whereby said indicia are illuminated from the rear during the transmissive mode but light is blocked from the rear of the background portion of the cell to enhance contrast ratio between these portions.

4,541,693

METHOD OF MAKING COLOR-NEUTRAL LCD INDICATORS OF LOW RESIDUAL TRANSMISSION

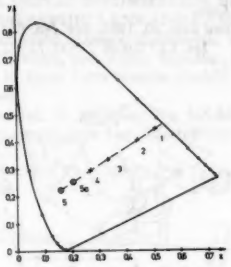
Peter Knoll, Ettlingen; Peter Rapps, Karlsruhe, and Wolfgang Ziegler, Fürth, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 26, 1983, Ser. No. 535,805
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1982, 3244248
Int. Cl.⁴ G02F *1/133, 1/137*
U.S. Cl. 350—339 F **6 Claims**

1. Method of producing color-neutral negative-contrast liquid, crystal display indicators of reduced residual transmission visibility in which a liquid crystal material is provided in said display comprising the additional step of:

mixing dichroic coloring material into the liquid crystal material of a twisted nematic (TN) liquid crystal display cell, said coloring material being of a color and in relative quantity for complementing the residual transmission

color of said liquid crystal display in its inactivated state, and



said liquid crystal material having a hueless appearance when mixed with said dichroic coloring material.

4,541,694

ACOUSTO-OPTIC SCANNERS

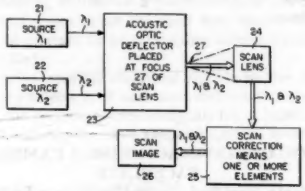
Sean Sullivan, East Grinstead, and Roger A. Edwards, Crawley, both of England, assignors to Rediffusion Simulation Limited, Crawley, England

Filed Mar. 25, 1983, Ser. No. 478,713

Claims priority, application United Kingdom, Mar. 27, 1982, 8209056

Int. Cl.⁴ G02F *1/33*

U.S. Cl. 350—371 **9 Claims**


SOURCE λ1
SOURCE λ2
ACOUSTIC OPTIC DEFLECTOR PLACED AT FOCUS OF SCAN LENS
SCAN LENS
SCAN IMAGE
SCAN CORRECTION MEANS ONE OR MORE ELEMENTS

1. An acousto-optic scanner comprising at least two optical sources providing two light beam outputs which differ in frequency, a common acousto-optic deflector, a scan lens, and scan correction means comprising a plurality of optical elements, the two outputs of the light sources being directed through the common acousto-optic deflector and the outputs of the common acousto-optic deflector being directed through the scan lens and the scan correction means to form a scan image, the scan correction means being positioned between the scan lens and the scan image, and the acousto-optic deflector being positioned between the said optical sources and the scan lens at the front focus of the scan lens.

4,541,695

ZOOM LENS FOR CAMERAS

Ronald C. Wainwright, Stevenage; Nicholas M. Goy, Granchester; John D. Anderson, Trumpington; Robert M. Pettigrew, Foxton, and John D. Bradbrook, Rouston, all of England, assignors to Establissements Pierre Angenieux SA, France

Filed May 4, 1983, Ser. No. 491,351

Claims priority, application United Kingdom, May 8, 1982, 8213361

Int. Cl.⁴ G02B *15/18*

U.S. Cl. 350—429 **14 Claims**

1. A camera zoom lens having fixed lens groups and at least two relatively movable lens groups and a controller comprising:

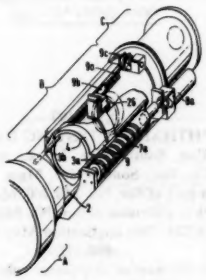
(1) means for generating a first information signal which corresponds to a target value of X for the position to which the first movable lens group should move;

(2) means for generating a second information signal whose value determines a relationship between the position of the first movable lens group and the position of the second movable lens group and which thereby controls the overall focal length of the lens groups;

(3) signal storage means for storing the computed target value of X;

(4) first computing circuit means for generating from the stored target value of X a signal corresponding to a value Y representing the position to which the second movable lens group must move so that the lens groups produce an in-focus image of the object at infinity;

(5) second computing circuit means responsive to the target value of X and the value of the second information signal for generating a correction signal dY which when combined with the signal Y produces an output signal whose value determines the position to which the second movable lens group must move so that the lens groups will produce an in-focus image of an object at a distance (less than infinity) determined by the selected value of the second information signal;



(6) third computing means responsive to the signal value dY and the value of Y for generating a target signal value YR (where YR=Y+dY) for the second movable lens group;

(7) second signal storage means for storing the YR signal;

(8) sensing means for producing information signals relating to the actual positions of said first and second movable lens groups;

(9) a central processor unit responsive to the stored values of X and YR and to the actual position-representative signals for producing two error signals e_x and e_y corresponding to any discrepancy between the actual positions of the movable lens groups and the target values X and YR for those groups; and

(10) velocity servo control systems responsive to the two error signals for controlling the rate of movement and direction of movement of the respective first and second movable lens groups, each of the velocity servo systems being arranged to come to rest when the actual position of its associated movable lens group occupies the position determined by the relevant target value (X or YR) for that group.

4,541,696

EYEGLASS RETAINER

Irwin Winger, 102 W. Yale Loop, Irvine, Calif. 92714, and Walter Friedopfer, 3225 Crystal Ct., Miami, Fla. 33133

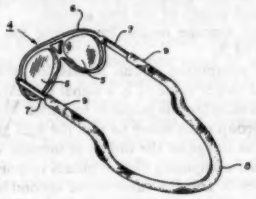
Filed Mar. 21, 1983, Ser. No. 477,349

Int. Cl.⁴ G03B *21/04*

U.S. Cl. 351—123 **1 Claim**

1. An improved eyeglass retainer of the type comprising an elastic knit material of suitable shape and diameter for securely engaging the side temples of eyeglasses and of suitable length

to exert a resilient rearward force on eyeglasses when in place around the head of a wearer of such eyeglasses; the improvement wherein said retainer comprises a unitary elongated flexible tube of 100% textured polyester knitted together with 100% rubber in a combination having about 60% polyester and



about 40% rubber, the end portions of said tube that are adapted to securely engage said eyeglass temples being internally coated with an adhered layer of vinyl whereby to increase the coefficient of friction and thus the relative engagement between said end portions and said temples.

4,541,697

OPHTHALMIC TESTING DEVICES

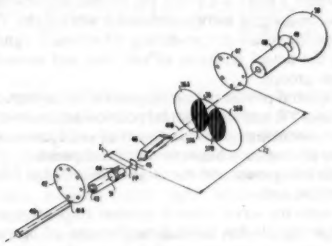
Paul W. Remijan, Southbridge, Mass., assignor to Randwal Instrument Co., Inc., Southbridge, Mass.

Continuation-in-part of Ser. No. 240,200, Mar. 3, 1981, Pat. No. 4,410,244, which is a division of Ser. No. 863,948, Dec. 23, 1977, Pat. No. 4,265,534. This application May 16, 1983, Ser. No. 494,712

The portion of the term of this patent subsequent to Oct. 18, 2000, has been disclaimed.

Int. Cl.⁴ A61B *3/10*

U.S. Cl. 351—211 **43 Claims**



1. Opthalmic apparatus for producing an interference pattern on the retina of an eye, said apparatus comprising:

A. interference pattern generating means for generating a first diffraction and a second diffraction that have equal strength, that overlap and the absolute values of whose order numbers are different thereby to produce a high-contrast, low-noise interference pattern in the area of overlap;

B. focusing means positioned on an axis to receive the interference pattern from said interference pattern generating means for projecting the interference pattern onto the retina from only two point sources of light in the eye pupil; and

C. means for affecting the interference pattern produced on the retina.

4,541,698

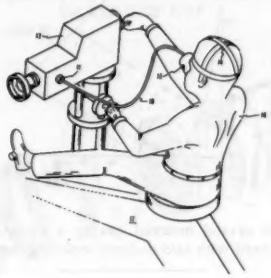
REMOTE CAMERA VIEWFINDER

Richard Lerner, Englewood, Colo., assignor to Cine-Tech, Inc., Englewood, Colo.

Filed Jun. 20, 1983, Ser. No. 505,733

Int. Cl.⁴ G03B *29/00, 13/02*

U.S. Cl. 354—82 **6 Claims**



1. A remote camera viewfinder comprising:

a fiber optic bundle of determinate length;

means for mounting one end of said bundle to the eyepiece of a camera, said mounting means including an adjustable lens for focusing the image from the camera eyepiece onto the adjacent end of the fiber optic bundle; and

viewing means on the other end of said bundle for allowing a photographer to see through said bundle into the eyepiece of the camera from a position remote from said eyepiece.

4,541,699

METHOD OF MANUFACTURING A CAMERA TUBE FACEPLATE

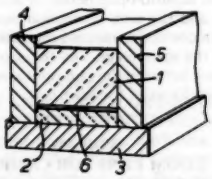
Peter B. Banks, Wickford, England, assignor to English Electric Valve Company Limited, Chelmsford, England

Filed Nov. 8, 1983, Ser. No. 550,027

Claims priority, application United Kingdom, Nov. 12, 1982, 8232387

Int. Cl.⁴ G03B *9/56*

U.S. Cl. 354—227.1 **9 Claims**



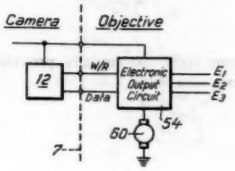
1. A method of manufacturing a camera tube glass faceplate in which an electrical conductor is embedded including: arranging a first glass member and a second glass member in a mould with a conductor located between them, fusing the members together in the mould, slicing a block formed by fusing together of the glass members to form a plurality of slices, and depositing on each slice a signal plate and a target to form a camera tube faceplate.

8. A camera tube faceplate manufactured by a method as claimed in claim **1**.

4,541,700
METHOD AND DEVICES FOR TRANSFERRING ELECTRICAL SIGNAL INFORMATION BETWEEN A PHOTOGRAPHIC LENS AND CAMERA

Walter Bletz, Braunfels; Herbert Machmerth, Solms, both of Fed. Rep. of Germany, and Walter Mandler, Midland, Canada, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed Jul. 21, 1983, Ser. No. 515,833
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1982, 3227404
Int. Cl.⁴ G03B *17/14*
U.S. Cl. 354—286 **16 Claims**



1. A method for transferring different types of information converted into electrical field lens signals from a photographic field lens of a camera to a corresponding camera body comprising the steps of:

(a) representing each type of said information by differentiatable electrical characteristics of the field lens signals, which characteristics are variable in accordance with the information;

(b) transmitting in one of a predetermined chronological order and series order the field lens signals via a same electrical contact to an evaluation circuit located in the camera body;

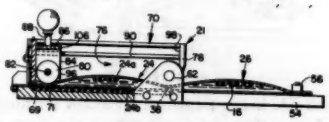
(c) producing specific electrical signals in the evaluation circuit by selection of said electrical characteristics; and

(d) using the specific electrical signals for at least one of the control and display of at least one camera function.

4,541,701
PHOTOGRAPHIC PROCESSING APPARATUS

David V. Cronin, Peabody, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 26, 1984, Ser. No. 593,519
Int. Cl.⁴ G03D *9/00, 3/02*
U.S. Cl. 354—324 **13 Claims**



1. Processing apparatus for treating a sheet-like film unit with a processing liquid, said apparatus comprising:

a liquid container having a reservoir section and a pair of wall members coupled to said reservoir section and being movable relative to each other between a closed position, wherein said wall members cooperate to define a compliant film unit receiving section disposed in communicating relation to said reservoir section, and an open position wherein said wall members are spaced further apart than when in said closed position to facilitate movement of a film unit into and out of said receiving section, said liquid container being configured to hold a volume of processing liquid, at least sufficient to have a film unit immersed therein, which is selectively distributed within said container to establish a first condition whereby said receiving section is substantially dry and substantially all of the liquid is in said reservoir section, and a second condition whereby said receiving section is flooded with liquid from said reservoir section to immersion treat a film unit therein;

means for supporting said liquid container;

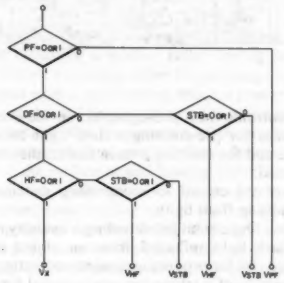
means operable for selectively moving at least one of said wall members relative to the other between said open and closed positions; and

pressure applying means operable when said wall members are in said closed position and configured to engage the exterior of said compliant receiving section for selectively pressing portions of said wall members against a wet immersion treated film unit therein to squeegee excess liquid from the film unit.

4,541,702
AUTOMATIC FOCUS ADJUSTING DEVICE

Haruhiko Momose; Toshiaki Takahashi; Yasushi Hoshino; Kohji Matsushima, and Michio Yagi, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 437,338, Oct. 28, 1982, abandoned.
This application Oct. 31, 1984, Ser. No. 667,058
Claims priority, application Japan, Nov. 6, 1981, 56-178878
Int. Cl.⁴ G03B *3/00*
U.S. Cl. 354—400 **13 Claims**



1. A photographic device having a lens and a diaphragm said device capable of automatically focusing said lens comprising

(a) a lens setting means capable of setting a lens to a particular position;

(b) a range finding means capable of generating a signal corresponding to a distance from said device to an object to be photographed;

(c) a primary judging means which determines whether or not a diaphragm setting is within a range in which fixed focus photography is possible; and

(d) a secondary judging means which determines whether or not said signal from said range finding means is capable of correctly operating said lens setting means to position said lens at a point corresponding to said distance to said object;

wherein said lens is set to

(1) a position corresponding to said output signal when said primary judging means determines that said diaphragm setting is not within the range in which fixed focus photography is possible and said secondary judging means determines that said output signal is capable of correctly setting said lens to a position corresponding to said distance from said device to said object,

(2) the fixed focal distance of said lens when said primary judging means determines said diaphragm setting is within the range in which fixed focus photography is possible,

(3) the hyper-focal distance of said lens when said primary

judging means determines that said diaphragm setting is not within the range in which fixed photography is possible and said secondary judging means determines that said signal from said range finder is not capable of correctly operating said lens setting means to position said lens at a point corresponding to said distance.

4,541,703

ELECTRONIC FLASH PHOTOGRAPHIC DEVICE

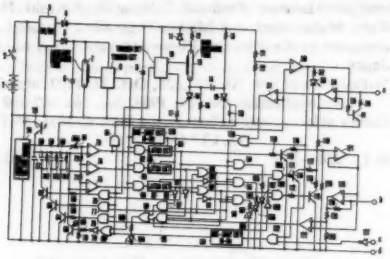
Hiroyuki Kataoka, Saitama; Masanori Yamada, and Nobuyuki Suzuki, both of Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 29, 1982, Ser. No. 454,334

Claims priority, application Japan, Jan. 5, 1982, 57-42; Jan. 9, 1982, 57-1964

Int. Cl.⁴ G03B *7/097*

U.S. Cl. 354—415 **8 Claims**



1. An electronic flash photographic device comprising:

flash means for pre-emitting a flash light before a shutter release and for emitting a main flash light when a shutter is opened;

a first control circuit for controlling an emission of the pre-emitting flash light;

a first detecting circuit for detecting a quantity of a pre-emitting flash light reflected from an object to be photographed and for producing an aperture setting signal to set the aperture of a taking lens and a signal for determining a light termination level at which the emission of the main flash light is stopped;

a second detecting circuit for detecting a quantity of a main flash light except for that passed through the lens and for producing a stop signal to terminate the emission of main flash light at the light termination level to be set in relation to the emission control of pre-emitting flash light; and

a correction circuit for correcting the light termination level, in relation to the F-number of full aperture of the taking lens mounted on the device.

4,541,704

PHOTOGRAPHIC CAMERA WITH ELECTRONIC IMAGE ENHANCEMENT

William T. Freeman, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 10, 1984, Ser. No. 648,773

Int. Cl.⁴ G03B *7/28*

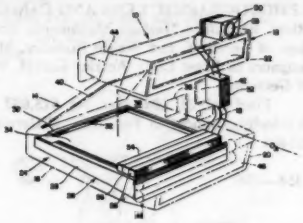
U.S. Cl. 354—432 **10 Claims**

1. A photographic camera apparatus comprising:

means for controlling the exposure of a photosensitive material to scene light received directly from a scene of which an image is to be recorded in a manner whereby the photosensitive material is exposed to an extent less than a selected optimum exposure value;

means for sensing the scene light from the scene to be photographed during said photographic exposure and converting said sensed scene light to electrical signal information corresponding to said sensed scene light; and

means responsive to said electrical signal information for exposing said photosensitive material to supplemental illumination which in conjunction with said direct exposure to scene light substantially provides the selected optimum exposure value.



4,541,705

COPYING APPARATUS HAVING TWO SEPARATE FUSING STATIONS FOR REPEATED IMAGE PROCESSING ON A COPY SHEET

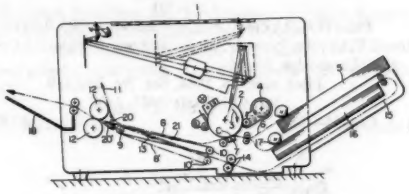
Wilhelm Knechtel, Biebertal, Fed. Rep. of Germany, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 25, 1983, Ser. No. 516,964

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1982, 3228940

Int. Cl.⁴ G03G *15/20*

U.S. Cl. 355—3 FU **8 Claims**



1. A both-side image formation apparatus for forming images on a front surface and a back surface of a sheet, comprising:

image forming means for guiding the sheet fed from a sheet stacking bed to an image processing station to form an image on the front surface of the sheet, then reversing the sheet and directing the reversed sheet to said image processing station to form an image on the back surface of the sheet; and

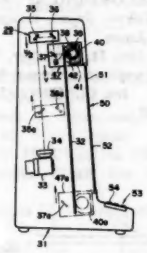
fixing means fixing the images formed on the sheet by said image processing station;

said fixing means including means for processing the sheet on the front surface on which an image is formed at a weak fixation condition, and said fixing means further processing the sheet on the back surface on which an image is formed in addition to the front surface thereof at a stronger fixation condition than the weak fixation condition.

4,541,706
IMAGE DISPLAY APPARATUS

Hirotoshi Kishi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 23, 1983, Ser. No. 554,626
Claims priority, application Japan, Nov. 29, 1982, 57-209178
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—3 R 13 Claims



1. An image display device using an electrophotographic image formation system, comprising:

a fixed and flat image bearing member having a conductive layer at a first side and a photoconductive layer at a second side;

light information means or applying light information to the first side of said image bearing member;

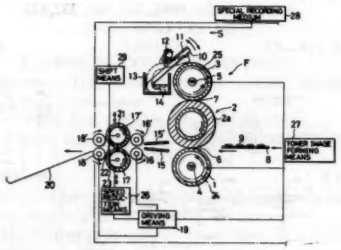
developing means for forming, on the second side of the image bearing member, a visible image with toner particles in accordance with the light information applied by said light information means; and

a housing for accommodating said image bearing member and said developing means, said housing being provided with an opening for allowing observation of the visible image.

4,541,707
RECORDING APPARATUS HAVING PARTING AGENT REMOVING MEANS

Kenji Yoshinaga, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 4, 1984, Ser. No. 596,832
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—3 FU 20 Claims



1. A recording apparatus having:

means for forming a toner image;

fixing means for fixing the formed toner image on a recording medium, said fixing means having a fixing rotatable member for contacting the toner image side of the recording medium and means for applying offset preventing parting liquid to said fixing rotatable member;

means for acting on a special recording medium inferior in parting liquid absorbing capability to paper and removing the parting liquid from the special recording medium, said removing means being positioned downstream of said fixing rotatable member with respect to the direction of conveyance of the recording medium;

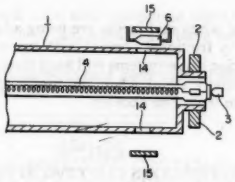
means for rotating said fixing rotatable member; and

control means for causing said removing means to act on said special recording medium.

4,541,708
HEATING-FIXING DEVICE

Michio Shigenobu, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 27, 1982, Ser. No. 453,160
Claims priority, application Japan, Jan. 9, 1982, 57-1894; Sep. 30, 1982, 57-171904
Int. Cl.[4] G03G *15/20*
U.S. Cl. 355—3 FU 12 Claims



1. A heating-fixing device comprising a heating source for emitting heat radiation, a heating roller having said heating source therewithin, a pressing roller for pressing a toner image bearing medium against said heating roller, a power source for supplying power to said heating source, temperature detecting means for detecting the temperature of the surface of said heating roller, a temperature control circuit for controlling the temperature of the surface of said heating roller in accordance with the detected temperature, a heat-responsive member connected between said heating source and said power source, said heat-responsive member being disposed at a position whereat it directly receives the heat radiation emitted by said heating source, and a reflecting member for reflecting the heat radiation which passes by said heat-responsive member back toward said heat-responsive member, said reflecting member being provided on the side of said heat-responsive member opposite to said heating source, wherein when the temperature of said heat-responsive member goes above a predetermined temperature, said heat-responsive member causes the supply of power from said power source to said heating source to be cut off.

4,541,709
IMAGE TRANSFER APPARATUS

Rutgerus J. M. Kampschreur, Venlo, Netherlands, assignor to Océ-Nederland B.V., Venlo, Netherlands

Filed Jan. 25, 1984, Ser. No. 573,621
Claims priority, application Netherlands, Feb. 4, 1983, 8300415
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—3 TR 8 Claims

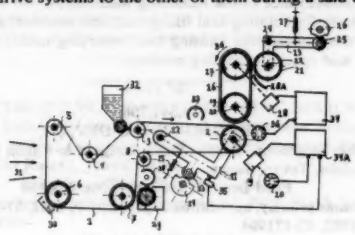
1. In an apparatus for transferring image information, including a first medium and a separate second medium, each for carrying image information and from one of which image information can be transferred to the other,

respective drive systems for advancing said media each at a constant or substantially constant speed, and

means for pressing one of said media into frictional contact with the other and holding the media in such contact during a time interval suited for transfer of image information from one advancing medium to the other, and for separating the media after each said interval, so that during each said interval the first medium will be advanced at

exactly the speed of the second medium under the frictional force of such contact,

a speed control system comprising means for adapting one of said drive systems to the other of them during a said time



interval when said media are being advanced at the same speed by frictional contact with one another so that the respective drive systems will keep the speeds of said media substantially equal when the media are being advanced separate from one another.

4,541,710

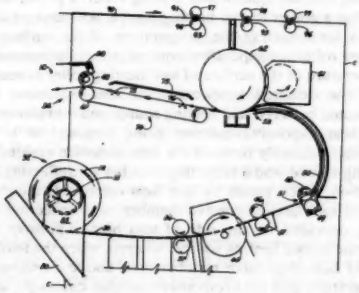
CONTINUOUS COPYING APPARATUS

Bruce J. McLeish, 650 Church St., San Francisco, Calif. 94114

Filed Feb. 10, 1984, Ser. No. 579,155

Int. Cl.[4] G03G *21/00*

U.S. Cl. 355—13 **10 Claims**



1. A continuous copying apparatus comprising:

a. a copier chassis having a copy paper inlet and a copy paper outlet on a common side of the copier chassis;

b. a supply web of copy paper comprising a compactly stored continuous elongated web which is positioned at the chassis to continuously feed the copy paper web into the inlet;

c. first roller drive means positioned on the chassis and adjacent the paper path for pulling copy paper from the supply web into the inlet;

d. a photocopying component system including at least a photoconductor, and an optics system for imaging an original to be copied onto the photoconductor for continuously imprinting an image to be copied on the web of copy paper as it traverses the copier chassis along a defined paper path;

e. drive means positioned on the chassis and sequentially behind the photocopying component system for pulling the copy paper web from the photocopying component system to the copier outlet;

f. guide means for supporting the web of copy paper as it traverses the copier chassis between the inlet and outlet along a generally semicircular paper path;

g. means for maintaining constant speed of the paper web between the copier inlet and the copier outlet so that very long, continuous documents can be copied; and

h. manual cut means for severing the copy paper web after a visual inspection indicates that the terminal end of the original has reached the optics.

4,541,711

RECORDING APPARATUS

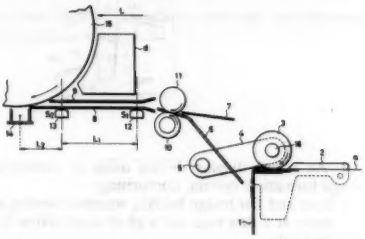
Yuji Takahashi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 31, 1983, Ser. No. 547,037

Claims priority, application Japan, Nov. 9, 1982, 57-195328

Int. Cl.[4] G03G *15/00*

U.S. Cl. 355—14 R **6 Claims**



1. A recording apparatus comprising:

recording means for image recording on a recording medium;

transport means for transporting the recording medium to said recording means;

detecting means for detecting the recording medium by monitoring a transporting condition of the recording medium transported by said transport means; and

control means for obtaining a transport speed of the recording medium according to an output of said detecting means and regulating the image position on said recording medium in accordance with said transport speed.

4,541,712

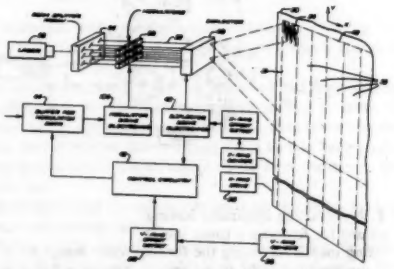
LASER PATTERN GENERATING SYSTEM

Theodore R. Whitney, Reseda, Calif., assignor to TRE Semiconductor Equipment Corporation, Woodland Hills, Calif.

Filed Dec. 21, 1981, Ser. No. 332,832

Int. Cl.[4] G03B *27/42*

U.S. Cl. 355—53 **43 Claims**



1. In a laser pattern generating system, the improvement comprising:

laser source means for providing a plurality of coaligned

laser beams impinging in noninterfering, mutually closely spaced relationship on the surface of a target;

deflector means for simultaneously deflecting said plurality of coaligned laser beams through a controllable range of angles across a portion of said surface while maintaining said closely spaced relationship; and

modulation means, independent of said providing means for selectively, independently modulating said beams during said deflection so that said modulated, deflected beams form an image on said surface.

4,541,713

DOCUMENT SIZE-DETECTING DEVICE OF COPYING MACHINE

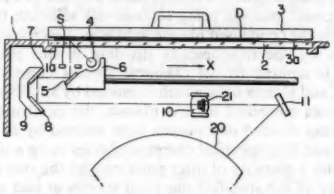
Yoshikazu Maekawa, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jan. 13, 1984, Ser. No. 570,361

Claims priority, application Japan, Jan. 19, 1983, 58-7925; Jan. 19, 1983, 58-7926

Int. Cl.⁴ G03B *27/62*; H01J *40/14*

U.S. Cl. 355—75 **4 Claims**



1. A copying machine comprising an optical scanner adapted to transfer an optical image of a document to be copied onto a photoreceptor during relative movement between said scanner and said document, a platen cover having a document-holding surface on one side thereof, said surface being adjacent said document on the side away from said scanner, said surface being provided with a plurality of colored portions corresponding to sizes of said documents in the scanning direction, a light projector irradiating said surface and said surface and said portions, light receiving means adapted to distinguish said portions from the rest of said surface, and generating an output signal corresponding to of each said portions, means for determining from said output signal whether said signal is in the range corresponding to the wavelength of said colored portions.

4,541,714

EXPOSURE CONTROL METHOD

Hiroshi Miyamoto, Tokyo, Japan, assignor to CRC Manufacturing Co., Ltd., Chofu, Japan

Filed Aug. 4, 1983, Ser. No. 520,320

Claims priority, application Japan, Aug. 4, 1982, 57-135945

Int. Cl.⁴ G03B *27/04*

U.S. Cl. 355—99 **3 Claims**

1. A method of handling workpieces and masks in a duplication process, said method comprising the steps of:

placing a stack of workpieces in a frame body in a stack-wise aligned relation;

positioning a mask in said frame body and over the stack of workpieces and in a preferred alignment therewith;

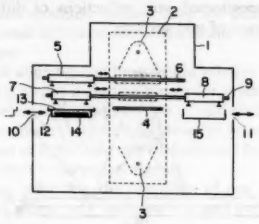
moving said frame body to a first fixed position within an exposure device;

transferring said mask from said frame body and mounting said mask onto a transparent plate at a second fixed position in the exposure device;

transferring said workpieces individually and successively from said frame body onto said mask at said second fixed position of said transparent plate;

exposing said workpieces successively and repeatably duplicating a pattern on said workpieces according to said mask;

discharging said exposed workpieces successively away from said second fixed position of said exposure device;



transferring said mask from said transparent plate back to said frame body after all of said workpieces have been exposed; and

moving said frame body with said mask carried therein out of said exposure device.

4,541,715

APPARATUS FOR DETECTING CONTAMINANTS ON THE RETICLE OF EXPOSURE SYSTEM

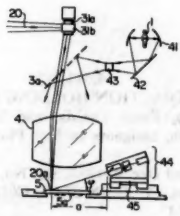
Nobuyuki Akiyama, and Mitsuyoshi Koizumi, both of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 6, 1983, Ser. No. 456,296

Claims priority, application Japan, Jan. 12, 1982, 57-2204

Int. Cl.⁴ G01N *21/00*

U.S. Cl. 356—237 **20 Claims**



9. An apparatus for detecting contaminants comprising means for projecting a laser beam through a condenser lens above a reticle mounted in a reduction projection mask aligner onto the upper surface of said reticle so as to form a laser spot thereon, means for swinging said laser beam so that the entire area of said reticle is scanned by said laser spot, and scattered light is emitted aslant from the reticle surface by impingement of said laser spot on contaminants on said reticle surface, photoelectric detector means for receiving said scattered light and for producing a signal indicative of the presence of contaminants on said reticle in accordance therewith.

4,541,716

DETECTION OF DEFECTS IN A CIRCULAR OR SPIRAL DIFFRACTION GRATING

Horatio N. Crooks, and Martin J. Kelly, Jr., both of Indianapolis, Ind., assignors to RCA Corporation, Princeton, N.J.

Filed Apr. 15, 1983, Ser. No. 485,474

Int. Cl.⁴ G01N *21/00*

U.S. Cl. 356—237 **8 Claims**

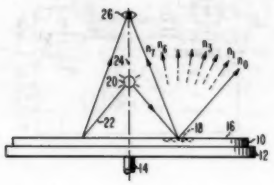
1. A method for detecting defects in the topography of a surface of a circular record having a circular or spiral diffraction grating having a center comprising the steps of:

positioning a substantially point source of polychromatic light

along a preselected axis perpendicular to said surface through said center;

illuminating at least a sector of the surface containing said grating with light from said source;

optically sensing at a predetermined position substantially along said preselected axis, reflections of diffracted light from said sector of said surface;



incrementally rotating said record from sector to sector to sequentially sense the reflected diffraction pattern from the entire disc; and

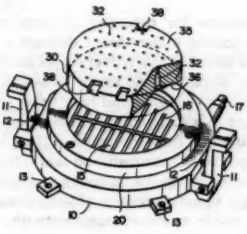
adjusting the respective illuminating and sensing positions to provide a pattern of diffraction reflections manifesting non-uniform spacing or average surface flatness in said diffraction pattern, wherein defects in the topography appear as non-uniformities in the diffraction reflections.

4,541,717

ATTRACTION HOLDING DEVICE

Shigeru Itamoto; Kenji Yasuda, and Senji Mikami, all of Saitama, Japan, assignors to Fuji Photo Optical Co., Ltd., Japan

Filed Dec. 8, 1983, Ser. No. 559,366
Int. Cl.[4] G01N *21/46*; G01B *9/02*
U.S. Cl. 356—244 **6 Claims**



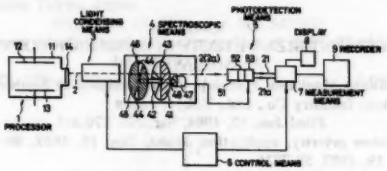
1. An attraction holding device comprising a base plate and an attraction plate mounted on said base plate with a lower surface of said attraction plate contacting an upper surface of said base plate so as to attract an object placed on an upper surface of said attraction plate to said base plate together with said attraction plate by sucking via attraction grooves formed on said base plate and attraction passages perforated through said attraction plate from the lower surface to the upper surface thereof, wherein the improvement comprises forming said upper surface of said base plate as a reflection plane, and constituting said attraction plate by use of a transparent material.

4,541,718

PLASMA MONITORING METHOD AND PLASMA MONITOR

Hisajiro Osada, Tokyo; Yutaka Hiratsuka, and Masahiro Watanabe, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 5, 1983, Ser. No. 455,802
Claims priority, application Japan, Jan. 12, 1982, 57-2201
Int. Cl.[4] G01J *3/48*
U.S. Cl. 356—316 **11 Claims**



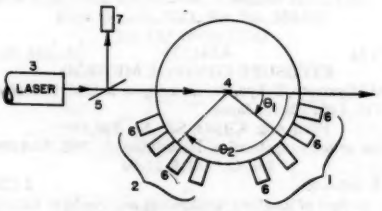
1. A plasma monitoring method comprising the step of condensing plasma light at a measurement position of a plasma, the measurement position being successively selected; the step of detecting the condensed plasma light at said each measurement position by spectroscopically dividing it into plasma light which is emitted by all chemical species constituting said plasma, and plasma light which is emitted by a specified chemical species contained in said plasma, the condensed plasma light being divided into plasma light emitted by all chemical species and by a specified chemical species using a single light filter with a plurality of filter portions; and the step of finding a density of the specified chemical species at said each measurement position on the basis of the divided plasma light detected by spectroscopically dividing the plasma light using the single light filter; thereby to measure a distributed state of the densities of said specified chemical species contained in said plasma.

4,541,719

METHOD AND APPARATUS FOR CHARACTERIZING MICROPARTICLES AND MEASURING THEIR RESPONSE TO THEIR ENVIRONMENT

Philip J. Wyatt, 820 E. Haley St., P.O. Box 3003, Santa Barbara, Calif. 93130

Filed Jul. 20, 1982, Ser. No. 403,340
Int. Cl.[4] G01N *21/00*
U.S. Cl. 356—343 **34 Claims**



1. A process for characterizing an ensemble of microparticles comprising the steps of:

A. preparing a sample of said particles;

B. illuminating said particles with a beam of radiation from a radiation source;

C. measuring over a fixed period of time the intensities of radiation scattered by said particles at two sets of discrete scattering angles with respect to the direction of the incident beam, each set of angles substending a range about each of two given angular directions;

D. examining the variations of scattered intensity at each

angular location with smaller intervals of such fixed time period and eliminating those values corresponding to large fluctuations from the mean value calculated during said fixed time period;

E. calculating the means scattered intensity value at each angular location member of each of the two sets of angular directions;

F. forming at least a first mathematical average scattered intensity of each set by combining the individual mean intensities of each element of the set yielding two characterizing values;

G. comparing said two characterizing values with two reference values to yield two values characterizing the particle ensemble.

4,541,720

APPARATUS FOR PHASE SYMMETRIZING OPTICAL WAVE FRONTS

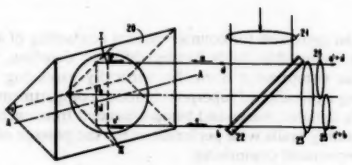
Gerd Häusler, Erlangen; Walter Järisch, Boeblingen, and Günter Makosch, Sindelfingen-Maichingen, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 19, 1982, Ser. No. 442,950

Claims priority, application 11251981, Nov. 25, 1981, 81109873

Int. Cl.⁴ G01B *9/02*

U.S. Cl. 356—345 **10 Claims**



1. In an interferometric method requiring both an input object beam and an input reference beam with substantially identical wave fronts, the steps comprising:

forming two optical beams with substantially planar wave fronts, but which possibly have different local wave front deformation; and

optically mixing said two optical beams to form an input object beam and an input reference beam with substantially identical wave fronts.

4,541,721

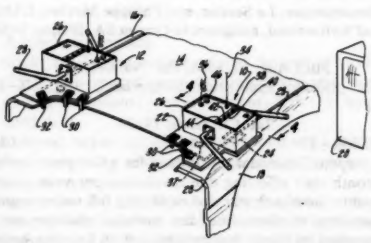
OPTICAL CHECKING APPARATUS AND METHOD OF USING SAME

Robert Dewar, Troy, Mich., assignor to Perceptron, Inc., Farmington Hills, Mich.

Filed Mar. 17, 1983, Ser. No. 476,431

Int. Cl.⁴ G01B *11/00, 11/14*

U.S. Cl. 356—375 **18 Claims**



1. Apparatus for determining the magnitude of the gap between two adjacent, spaced apart surfaces and/or for determining the height of one of said surfaces relative to the other of said surfaces, comprising:

a base adapted to be removably supported on at least one of said surfaces

first means mounted on said base for delivering a line of collimated light onto said surfaces and transversely across said gap;

means for aligning said line of light relative to said gap, said aligning means including means for orienting said base in a preselected position on one of said surfaces;

second means mounted on said base for sensing reflections of said line of light from said surfaces and for converting said reflections to electrical signals;

means for inhibiting the operation of one of said first and second means until said base is in said preselected position thereof; and

third means for calculating the magnitude of said gap and/or the height of said one surface relative to the other of said surfaces using said electrical signals.

4,541,722

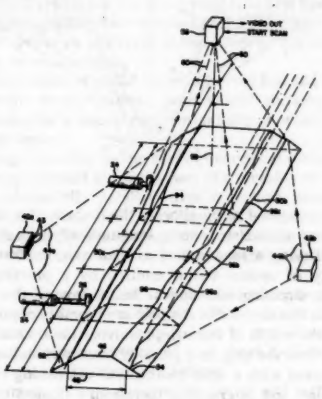
CONTOUR LINE SCANNER

Earl D. Jenks, Springfield, Oreg., assignor to JENKSystems, Inc., Springfield, Oreg.

Filed Dec. 13, 1982, Ser. No. 449,392

Int. Cl.⁴ G01N *21/22*

U.S. Cl. 356—376 **16 Claims**



1. Sawmill control apparatus for sensing the contours of a cant having a cross section defined by a pair of opposite broad faces and a pair of opposite side faces, and determining an optimum sawline normal to said broad faces, the apparatus comprising:

beam-forming means for projecting a pair of lines of light onto each of the opposite side faces of a cant in a common plane parallel to the broad faces of the cant to form contour lines of light lengthwise along the side faces, the lines being substantially narrower than the side faces;

light sensor means directed toward the cant at an angle to said plane for sensing the contour lines and generating an output signal corresponding thereto; and

first means responsive to the output signal for defining, in accordance with said contour lines, a width of the cant along its length;

second means for determining the position of a sawline relative to one of said contour lines to maximize, as a function of said width, the recovery of lumber from the cant;

the beam-forming means being positioned to project said

lines onto the sides of the cant at a predetermined position between the broad faces to define a grade line corresponding to a specified grade of lumber;

the second means including means for computing a total value of lumber, as a function of said specified grade, can be sawn from the cant between the contour lines positioned at said grade line.

4,541,723

MONITORING THE PLANARITY OF METAL SHEET

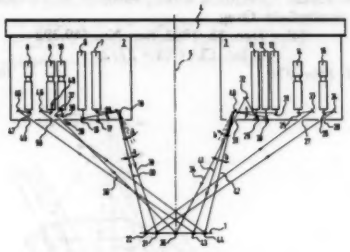
Robert A. Piriet, Embourg, Belgium, assignor to Centre de Recherches Metallurgiques-Centrum Voor Research in de Metallurgie, Brussels, Belgium

Continuation of Ser. No. 272,910, Jun. 12, 1981, abandoned. This application Dec. 20, 1983, Ser. No. 563,261

Claims priority, application Belgium, Jun. 13, 1980, 883832

Int. Cl.⁴ G01B *11/24*

U.S. Cl. 356—376 18 Claims



1. In a method of monitoring the flatness of a substantially horizontal metal strip running longitudinally on a strip support means having a longitudinal median axis, by transmitting a plurality of optical beams emitted by a plurality of light sources, directing said optical beams toward the strip from above so that they strike the strip at a plurality of points spaced across the width of the strip, receiving the optical beams reflected from the strip on a plurality of corresponding receivers each paired with a light source, and calculating the level of said points and determining therefrom a flatness index of the strip, the improvement comprising:

locating at least two of said light sources symmetrically to each other with respect to a vertical plane containing said longitudinal median axis;

locating said receivers paired with said at least two light sources symmetrically to each other, with respect to said vertical plane containing said longitudinal median axis;

orientating the optical beams emitted by said at least two light sources in such a manner that they form an identical angle with the said vertical plane and strike the strip surface at points that are located symmetrically to each other with respect to said longitudinal median axis;

orientating the optical axes of said receivers, located symmetrically to each other with respect to said vertical plane, so that the angles formed by each of said optical axes with the axis of the optical beam emitted by the paired light source are all equal; and

intercepting at least two of said optical beams from said light sources by means of a single common deflector orientatable about an axis of rotation and directing said intercepted optical beams to two points both located on the same side of the strip.

4,541,724

APPARATUS FOR COUNTER-CURRENT CONTACT OF FLUIDS

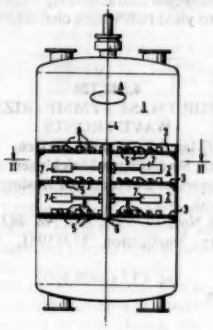
Anton E. Cornelissen, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Jul. 13, 1984, Ser. No. 630,915

Claims priority, application United Kingdom, Jul. 29, 1983, 8320549

Int. Cl.⁴ B01F *7/16*

U.S. Cl. 366—290 6 Claims



1. In an apparatus for counter-current contacting of at least partially immiscible fluids having different densities, which apparatus comprises a normally vertically extending vessel enclosing a plurality of superposed mixing compartments with rotatable agitator means and being separated from each other by separating walls with perforations for the passage of fluid, the improvement comprising:

said mixing compartments being positioned adjacent to each other and separated by walls pierced by perforations which are substantially uniformly distributed over their wall areas;

deflecting elements arranged to cooperate with a proportion of said perforations which proportion is correlated with the ratio of the volumetric flow rates of the fluids to be treated; and

said deflecting elements being positioned and oriented with respect to the direction of flow of the dispersed fluids and the direction of rotation of said agitator so that they tend to prevent flow of the dispersed fluid through the perforations with which they cooperate, so that the apparatus is particularly suitable for contacting fluids with a large ratio of their respective flow rates and is capable of providing stable operation with the fluid having the smaller volumetric flow rate as the dispersed phase.

4,541,725

PERPETUAL CALENDAR MECHANISM COMPRISING A FOUR YEAR CYCLE INDICATOR

Louis Baumgartner, Le Sentier, and Philippe Meylan, L'Orient, both of Switzerland, assignors to Omega SA, Bienne, Switzerland

Filed Aug. 15, 1984, Ser. No. 641,122

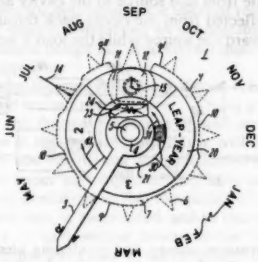
Claims priority, application Switzerland, Aug. 30, 1983, 4748/83

Int. Cl.⁴ G04B *19/24*

U.S. Cl. 368—37 4 Claims

1. A perpetual calendar mechanism for a timepiece comprising a month start effecting one revolution per year, a month cam fixed to the month star and exhibiting full radius segments corresponding to thirty-one day months, shallow notches corresponding to thirty day months and an opening between the full radius segments corresponding to January and March, a rotatable assembly journalled on the month star and includ-

ing a year cam arranged to effect one revolution every four years, said year cam exhibiting four sides which appear successively in said opening, a month indicator, a four year cycle indicator said cycle indicator being controlled by said rotatable assembly, and a first ring fixed to the month star, the month



indicator comprising a hand borne by a pipe fixed to said star, and the four-year cycle indicator comprising a second ring fixed to a pinion journalled on said pipe, said second ring being able to turn freely within said first ring and said pinion being arranged to mesh with teeth borne by the rotatable assembly journalled on the star.

4,541,726

TWENTY-FIVE (25) HOUR CLOCK

Morton Rachofsky, 5511 Stonegate Rd., Dallas, Tex. 75209

Filed Sep. 17, 1984, Ser. No. 650,730

Int. Cl.[4] G04B *19/04*

U.S. Cl. 368—80 **7 Claims**

1. A clock, comprising:

a clock face having indicia printed thereon at twenty-five (25) equally-spaced intervals, each of said intervals representing a simulated hour in a twenty-five (25) hour simulated day;

clock hand means including an hour hand and a minute hand for cooperating with said clock face to provide a time indication; and

drive means for simultaneously driving said minute hand around said clock face and said hour hand between spaced intervals in 1/25th of said twenty-four (24) hour real-time day, whereby said clock represents twenty-five (25) simulated hours in a twenty-four (24) hour real-time day.

4,541,727

LENTICULAR OPTICAL SYSTEM

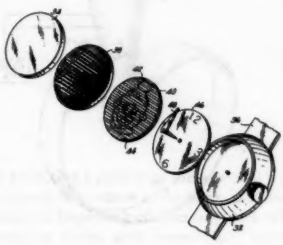
Bruce A. Rosenthal, 6 Bulaire Rd., East Rockaway, N.Y. 11518

Continuation of Ser. No. 451,667, Dec. 21, 1982, abandoned, which is a continuation of Ser. No. 345,850, Feb. 4, 1982, abandoned, which is a continuation of Ser. No. 52,136, Jun. 26, 1979, abandoned, which is a continuation of Ser. No. 775,715, Mar. 9, 1977, abandoned, which is a continuation of Ser. No. 641,257, Dec. 16, 1975, Pat. No. 4,034,555. This application Mar. 21, 1984, Ser. No. 591,709

The portion of the term of this patent subsequent to Jul. 12, 1994, has been disclaimed.

Int. Cl.[4] G04B *19/06*

U.S. Cl. 368—232 **1 Claim**



1. An optical system for use in viewing at least a first and a second image, each of which are alternately perceived by the user of this system as relatively independent of one another, comprising, in combination:

a transparent sheet of plastic material having first and second oppositely facing surfaces, one of said surfaces being constituted by a plurality of substantially parallel lenticular-type lenses,

a first image viewable by the user of the optical system, said first image formed at least in part of a plurality of spaced apart substantially parallel strips of indicia, spaces between said substantially parallel strips of indicia being characterized by the absence of such indicia and being further characterized by the ability to transmit light therethrough,

at least one object disposed such that said transparent sheet is positioned between said object and the user of the optical system, said object being at least in part viewable by said user through portions of said sheet including said spaces between said strips of indicia,

said first image being supported by one of said surfaces of said transparent sheet of material,

the presence of said object contributing to a second image viewable alternately with said first image by the user of said optical system through said sheet of transparent material,

said object being spaced a predetermined distance from said second surface of said transparent sheet of material,

said lenticular-type lenses being disposed at said first surface,

said first and second images together at least in part to the viewer of said optical system being perceived as forming a third composite image of the combination thereof,

said strips of indicia having dimensions including widths of substantially equal first magnitudes,

said lenticular-type lenses having dimensions including widths of substantially equal second magnitudes,

said first magnitudes being substantially equal to one another,

said second magnitudes being substantially equal to one another,

said first image comprising indicia printed upon one of said first or second surfaces of said sheet of transparent sheet material,

the said optical system being capable of affording the user

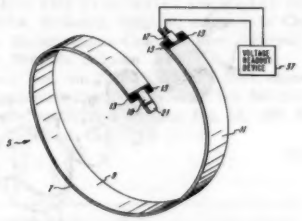
thereof an ability to select and replace said object to provide a system capable of exhibiting a variety of predetermined composite images.

4,541,728

DEVICE AND METHOD FOR MEASURING HEAT FLUX AND METHOD FOR FORMING SUCH A DEVICE

Ray L. Hauser, 5758 Rustic Knolls Dr., Boulder, Colo. 80301, and Rodney B. McKeever, Boulder, Colo., assignors to Ray L. Hauser, Boulder, Colo.

Filed Jul. 25, 1983, Ser. No. 517,202
Int. Cl.[4] G01K *17/00*
U.S. Cl. 374—29 **21 Claims**



1. A device for measuring heat flux, said device comprising:

sensing means for sensing heat flux of an article to be tested, said sensing means including first and second thermopile elements each of which includes a plurality of thermopile junctions between which temperature differentials are sensed at predetermined spaced points when said sensing means is closely adjacent to a surface of said article, and each of said thermopile elements, responsive to sensed heat flux, providing an output voltage indicative thereof with said output voltages from said first and second thermopile elements being summed to provide a summation output voltage from said sensing means;

belt-like support means including flexible cover means for substantially entirely encasing said sensing means with said sensing means being located at the center one-third portion of the width of said belt-like support means and extending for substantially the entire length of said belt-like support means, and with said flexible cover means including a polymer at one side of said sensing means providing high infrared emissivity and a metal foil at the other side of said sensing means providing low infrared emissivity, said support means being adapted to maintain said sensing means closely adjacent to said surface of said article; and

output means electrically connected with said sensing means, said output means being adapted to couple said summation output voltage indicative of said sensed heat flux from said device.

4,541,729

MICROWAVE HEATING CONTROL AND CALORIMETRIC ANALYSIS

Norman W. Schubring, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

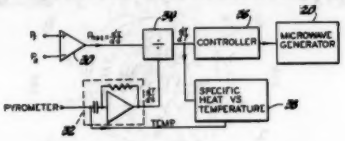
Division of Ser. No. 338,636, Jan. 11, 1982, Pat. No. 4,434,342. This application Oct. 26, 1983, Ser. No. 545,469
Int. Cl.[4] G01K *17/00*
U.S. Cl. 374—31 **5 Claims**

1. A method of using microwave energy to obtain calorimetric data on a work load that is heatable with microwaves, comprising

subjecting a load of such material to microwave energy while the material is situated in a cavity receptive to the microwave energy and retentive of radiation from the heated load, said microwave energy being generated at a source remote from said cavity and conducted to the cavity through a suitable microwave waveguide,

producing an electrical signal indicative of the temperature of the load in said cavity while it is being heated with said microwave energy,

monitoring microwave power transmitted through the waveguide from said source to the cavity and microwave power reflected from the cavity back through the waveguide toward the source while the load is being heated by



said microwave energy and producing electrical signals indicative of said microwave power levels, and

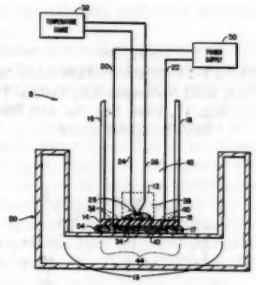
processing said temperature indicative signal and said microwave power level signals by electrical analog circuit to obtain a signal indicative of the microwave energy input to the heated work load as a function of the temperature of the work load which is an indication of calorimetric data of the work load while it is being heated by said microwave energy.

4,541,730

APPARATUS AND METHOD FOR TESTING EVACUATABLE DEWAR VESSELS

David M. Comey, and Ronald R. Kusner, both of Concord, Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 19, 1983, Ser. No. 496,142
Int. Cl.[4] G01F *1/68;* G01N *25/20*
U.S. Cl. 374—43 **9 Claims**



1. A method for determining the thermal resistance of a dewar device of a predetermined design at a first cryogenic temperature by measurement of the thermal resistance of said dewar device made at a second temperature, said method comprising:

A. a calibration procedure comprising:

i. measuring the thermal resistances of a substantially perfect dewar device of said predetermined design at said second temperature, alternately under the expected operating and expected failure conditions of said dewar device design;

ii. measuring the thermal resistance of said substantially perfect dewar device at said first cryogenic temperature under said expected operating conditions of said dewar device design;

iii. determining the sensitivity of said resistance of said substantially perfect dewar device to operation under said expected failure conditions by comparison of said thermal

resistance of said substantially perfect dewar device at said second temperature under said expected operating and said expected failure conditions;

iv. determining the calibration correlation between the thermal resistance of said substantially perfect dewar device at said first and said second temperatures under said expected operating conditions; and

B. a test procedure for determining the thermal resistance of a second dewar device, comprising an evacuatable vessel, of said predetermined design but of unknown quality, said test procedure comprising:

i. measuring the thermal resistance of said second dewar device at said second temperature;

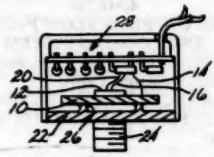
ii. comparing the thermal resistance of said second dewar device taken at said second temperature with the thermal resistance of said first dewar device taken at said second temperature under said expected operating and said expected failure conditions so that the quality of said second dewar device may be ascertained, and so that the thermal conductivity of said second dewar device at said first cryogenic temperature may be approximated by comparison to said calibration correlation.

4,541,731

TEMPERATURE SENSITIVE TRANSDUCER WITH A RESONANT BIMETAL DISK

Lon E. Bell, and William P. Gruber, both of Altadena, Calif., assignors to Technar, Incorporated, Altadena, Calif.

Filed Apr. 21, 1983, Ser. No. 487,067
Int. Cl.⁴ G01K *11/26*
U.S. Cl. 374—117 **6 Claims**



1. A temperature sensitive transducer comprising:

a vibrating member comprising a bimetal disk having a resonant mode of vibration, the vibrating bimetal disk having a stiffness that changes over a wide range with small changes in temperature, electrical drive means for sustaining vibration of said bimetal disk in its resonant mode, and means for generating a periodic output signal tuned to the frequency of the vibrating bimetal disk.

4,541,732

ULTRASONIC TEMPERATURE SENSOR

Kirti C. Shah, North Billerica, Mass., assignor to General Electric Co., Schenectady, N.Y.

Filed Jan. 27, 1984, Ser. No. 574,790
Int. Cl.⁴ G01K *11/22*
U.S. Cl. 374—117 **4 Claims**

1. An ultrasonic temperature measuring arrangement comprising:

(a) a transducer for producing torsional waves,

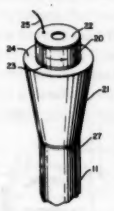
(b) a hollow wave guide coupled to said transducer for transmitting torsional waves from said transducer along the inner surface of said hollow wave guide,

(c) the outer dimensions of said transducer being greater than the outer diameter of said hollow wave guide,

(d) means for coupling said torsional waves from the transducer to the hollow wave guide, said means including a tapered mounting head having a tapered interior passage supporting said transducer at the large end of the hollow tapered interior passage, the dimensions of the hollow passage at its smaller end being the same as the outer diameter of said hollow portion of said wave guide said small end of said mounting head being directly in contact with said wave guide,

(e) hollow temperature sensing means fabricated of a material having a temperature dependent torsional modulus coupled to said wave guide and positioned in a medium whose temperature is to be measured for producing a pair of pulses with the interval between said pulses being a measure of temperature including:

(1) a discontinuity in the interior of the said hollow wave



guide for reflecting a portion of the torsional wave from said wave guide to produce a first pulse, said discontinuity defining the beginning of a sensing path whose torsional modulus varies with temperature whereby the propagational speed of the torsional wave transmit over the hollow sensing path varies with temperature,

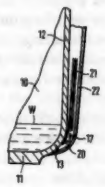
(2) the remaining torsional energy being transmitted over said path and reflected from the end thereof to produce a second pulse, whereby the time interval of said pulses is proportional to the temperature.

4,541,733

FITTING FOR A COOKING UTENSIL, PARTICULARLY A STEAM PRESSURE COOKING PAN

Wolfram K. Andre, Aichwald, Fed. Rep. of Germany, assignor to Kurt Wolf & Co. KG, Fed. Rep. of Germany

Filed Oct. 6, 1983, Ser. No. 539,684
Claims priority, application Fed. Rep. of Germany, Oct. 20, 1982, 3238769
Int. Cl.⁴ G01K *1/14;* A47J *27/00*
U.S. Cl. 374—149 **13 Claims**



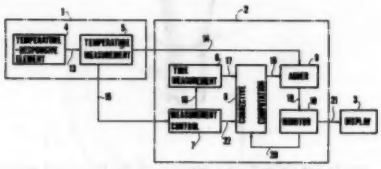
1. A cooking utensil comprising a cooking pot having a vertical wall and a base and a cover with water contents (W), with a temperature sensor attached to said cooking pot, which emits an electrical signal corresponding to the temperature inside said cooking utensil, characterized by having a temperature sensor (17) attached by means to the external surface of said cooking pot (10) at a point selected adjacent said wall at the beginning of the transition region (13) between the wall (12) and the base (11) of said pot by a heat-conducting connection to a measuring point (14), the temperature difference (ΔT) between the temperature (Tw) of said water contents (W) and the temperature (Ta) of said external surface of said cooking pot (10) at said measuring point (14) is, during heating of said liquid contents until said contents reach a critical temperature of about 100° C., approximately zero.

4,541,734

ELECTRONIC CLINICAL THERMOMETER, AND METHOD OF MEASURING BODY TEMPERATURE

Hideo Ishizaka, Fujinomiya, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 14, 1983, Ser. No. 504,236
Claims priority, application Japan, Jun. 24, 1982, 57-108893; Jun. 24, 1982, 57-108894
Int. Cl.[4] G01K 7/00
U.S. Cl. 374—169 14 Claims



1. An electronic clinical thermometer which comprises:

means for sensing body temperature at various prescribed parts of a body;

arithmetic means coupled to said temperature sensing means for predicting a final, stable temperature based on the sensed body temperature, said arithmetic means being adapted to selectively execute a plurality of temperature prediction functions conforming with measurement conditions pertaining to each of the various prescribed body parts to be measured, in which functions elapsed measurement time is a variable, each function prescribing a temperature change up to a final, stable temperature;

display means coupled to said arithmetic means for displaying the predicted temperature; and

control means for clocking elapsed measurement time and for controlling said temperature sensing means and said arithmetic means at sampling instants;

said arithmetic means including:

(a) first setting means for setting one of said plurality of temperature prediction functions for a prescribed body part;

(b) means for obtaining a final, stable temperature at least twice in accordance with a time series, at the sampling instants decided by said control means, based on said set temperature prediction function and body temperature sensed by said temperature sensing means;

(c) means for comparing a final, stable temperature last obtained by said obtaining means with a final, stable temperature obtained at a previous sampling instant, and for obtaining the difference between said two final temperatures;

(d) second setting means for setting a new temperature prediction function from said plurality of temperature prediction functions for said prescribed body part when said difference falls outside prescribed limits to enable said obtaining means to obtain a final, stable temperature at least twice in accordance with said time series based on said new temperature prediction function; and

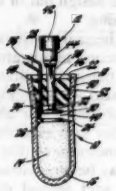
(e) means for supplying said display means with a signal indicative of that final, stable temperature obtained by said obtaining means which results in said difference falling within the prescribed limits.

4,541,735

THERMAL SENSING ELEMENT USING METHANOL SATURATED FLUOROCARBON ELASTOMER AS THE HEAT RESPONSIVE MATERIAL

Ismat A. Abu-Isa, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 24, 1984, Ser. No. 685,805
Int. Cl.[4] G01K 5/48; H01H 37/46
U.S. Cl. 374—188 2 Claims



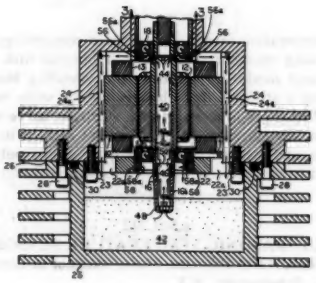
1. An improved heat responsive thermal element of the type having a first and second electrode and a volume of heat responsive material acting in combination with said electrodes to permit the flow of electricity between them when a predetermined temperature change has produced a predetermined volume change in said material, wherein the improvement comprises a heat responsive material of methanol saturated copolymer of hexafluoropropylene and vinylidene fluoride.

4,541,736

CENTRIFUGAL OIL PUMP FLOW PROPORTIONING AND COOLING SYSTEM

Robert H. Giebeler, Jr., Cupertino, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Apr. 30, 1984, Ser. No. 605,355
Int. Cl.[4] F16C 33/66, 37/00; F01M 9/12
U.S. Cl. 384—465 21 Claims



11. In a lubricating and cooling system for a centrifuge motor of the type having a vertical shaft journalled in upper and lower bearings and an oil sump, said shaft defining an internal passage for the flow of oil from the sump and upper and lower holes through which oil on the surface of the passage may flow into the vicinity of the bearings, the improvement comprising:

(a) a tapered inlet at the lower end of the shaft for forcing oil from the sump upwardly into the passage, the size and taper of said inlet being selected to produce through the passage a flow of oil that is substantially greater than that necessary to lubricate the bearings,

(b) lower proportioning means including a radial discontinuity in the passage for directing a first predetermined fraction of said flow of oil through the lower hole, and

(c) upper proportioning means for diverting a predetermined

fraction of the oil emerging from the upper hole into the vicinity of the upper bearing.

4,541,737

SCOOP FOR PICKING UP LUBRICANT

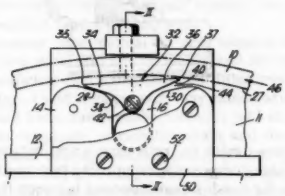
William W. White, Glasgow, Scotland, assignor to James Howden & Company Limited, Glasgow, Scotland

Filed Nov. 1, 1984, Ser. No. 667,103

Claims priority, application United Kingdom, Nov. 7, 1983, 8329687

Int. Cl.⁴ F16C *33/10*; F16N *7/14*

U.S. Cl. 384—406 **4 Claims**



4. In a bearing comprising a fixed part having a bearing surface, a shaft rotatable in the bearing surface, a radially extending disc mounted on the shaft for rotation therewith, an axially extending ring mounted on said disc at a location spaced radially from the shaft, a lubricant reservoir, means to feed lubricant from the reservoir to said bearing surface, means to lead lubricant from said bearing surface to the vicinity of the lower part of the ring, a lubricant scoop mounted within said ring and closely adjacent thereto, a closed conduit leading from said scoop to said reservoir, the arrangement being such that, upon rotation of said shaft, a film of lubricant is formed in the inner surface of said ring, this film being picked up by said scoop to produce a pressure head sufficient to pump lubricant via a filter and a cooler to said reservoir, the improvement consisting in that said scoop comprises, in combination:

(a) a body formed with a chamber therein;

(b) an outlet for lubricant from said chamber;

(v) first and second convergent surfaces formed on said body and defining a mouth leading to said chamber;

(d) a pivotal deflector mounted within said mouth;

(e) a pivot pivotally mounting said deflector on said body;

(f) first and second oppositely directed arms on said deflector and each having a top thereon remote from said pivot;

(g) first and second faces on said first and second arms respectively directed towards said first and second convergent surfaces respectively; and

(h) said deflector being pivotal from one position, in which the tip of the first arm abuts and seals against the first convergent surface and the tip of the second arm is positioned adjacent the inner surface of the peripheral ring, the second face and second convergent surface then defining a passage into the chamber, to another position in which the tip of the second arm abuts and seals against the second convergent surface and the tip of the first arm is positioned adjacent the inner surface of the peripheral ring, the first face and first convergent surface then defining a passage into the chamber.

4,541,738

REFRIGERANT COOLED TAPERED ROLLER BEARING ASSEMBLY

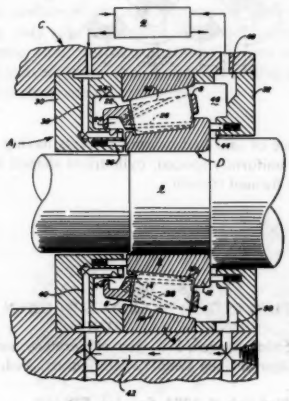
Robert L. Leibensperger, Canton, and Karl W. Reed, North Canton, both of Ohio, assignors to The Timken Company, Canton, Ohio

Filed Aug. 11, 1983, Ser. No. 522,096

Int. Cl.⁴ F16C *37/00, 33/66*

U.S. Cl. 384—470 **26 Claims**

1. A bearing assembly comprising: a tapered roller bearing including a cone having an outwardly presented tapered raceway, a cup having an inwardly presented tapered raceway that surrounds the raceway of the cone, a thrust rib at the large diameter end of one of the raceways, tapered rollers located between and contacting the raceways of the cup and cone and further having their large end faces against the thrust rib, and a cage for maintaining the correct spacing between the rollers; a first closure at one end of the bearing and containing a supply channel that leads generally to the space between the small ends of two raceways for the bearing; a second closure at the opposite end of the bearing and containing a port that leads away from the space between the two raceways, such that a gas in the isolated space may escape through the port, but not a liquid, the two closures isolating from the surrounding atmosphere the space between the two raceways; means defining a circulation channel that extends from that end of the isolated space at the second closure to the supply channel in the first



closure, the circulation channel opening into the isolated space at the second closure such that a liquid in the space at the second closure will drain to and into the circulation channel; a liquid mixture of refrigerant and oil which circulates through the isolated space and channels when the rollers roll along the raceways, the refrigerant having a boiling point substantially lower than the oil so that it will vaporize in the vicinity of the rollers, raceways and thrust rib when they are above the boiling point of the refrigerant, whereby the refrigerant will absorb heat from the cone, cup, rollers, and thrust rib; and a heat exchanger connected to the isolated space at both the first and second closures, with the connection at the second closure being at the port so that vaporized refrigerant will pass into the heat exchanger, the heat exchanger being capable of condensing the refrigerant back to a liquid, whereby the refrigerant is discharged into the space at the first closure as a liquid.

4,541,739

CONTROLLED CAPILLARY BALL BEARING CAGE

Terry S. Allen; Dennis W. Smith, and Peter E. Jacobson, all of Phoenix, Ariz., assignors to Sperry Corporation, New York, N.Y.

Filed Aug. 31, 1984, Ser. No. 646,330

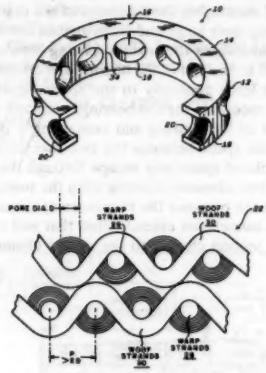
Int. Cl.⁴ F16C *33/38*

U.S. Cl. 384—470 **1 Claim**

1. A controlled capillary ball bearing cage of a type having a hollow cylindrical shape with walls of predetermined length and radial thickness and a plurality of circular ball bearing pockets formed through said cylindar wall, said ball bearing cage comprising:

a multiplicity of woven mesh layers having warp and woof strands of preselected material and diameters,

said woven mesh layers being bonded with a selected filler material,



circumference of said ball bearing pockets having a multiplicity of uniformly spaced, cylindrical shaped lubricant reservoirs formed therein.

4,541,740

LUBRICATING ROTOR BEARINGS IN OPEN END SPINNING MACHINES

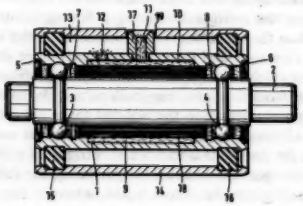
Lothar Schard, Sindelfingen, Fed. Rep. of Germany, assignor to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Feb. 9, 1984, Ser. No. 578,668

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1983, 3304912

Int. Cl.⁴ F16C *33/66*

U.S. Cl. 384—473 **2 Claims**



1. In a rotor bearing assembly having a shaft journalled within a housing by a pair of spaced bearings and having an oil guide surrounding said shaft, said housing and said oil guide defining a storage space for retaining a supply of grease and being capable of releasing oil into said oil guide, the improvement comprising means for selectively replenishing the storage space with a fresh supply of grease comprising an inlet extending radially through said housing into said storage space for the introducing of fresh grease thereto, an outlet through said housing for discharging a quantity of grease from said storage space and a tubular casing surrounding and spaced from said housing to define a collection chamber exterior of said housing for receiving said discharged grease, said casing being supported by a pair of axially spaced elastic support rings sealing the ends of said collection chamber.

4,541,741

SEALS FOR BEARINGS

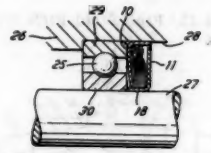
Keith W. Woodbridge, and Derrick G. Hjertzen, both of Luton, England, assignors to SKF (U.K.) Limited, Luton, England

Filed Jun. 22, 1983, Ser. No. 506,861

Claims priority, application United Kingdom, Jun. 30, 1982, 8218865

Int. Cl.⁴ F16C *33/76*

U.S. Cl. 384—482 **18 Claims**



1. A sealing device for providing a seal between two relatively rotatable components, comprising two co-axial members and an annular brush screen disposed between the two members, wherein one of the members comprises an annular disc formed with an outer flange which surrounds the annular brush screen, the other member comprise an annular disc formed with an inner flange which projects through the bore of the annular brush screen, the two members co-operating to form a casing which substantially encloses and protects the brush screen, and each of said members is formed with an annular sealing surface in contact with the adjacent side of the brush screen, the arrangement being such that the filaments of the brush screen are compressed transversely between the two annular sealing surfaces upon relative axial movement of the members towards one another.

4,541,742

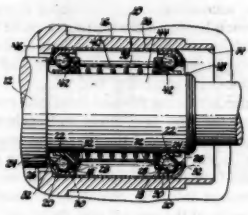
UNITIZED STEERING COLUMN BEARING ASSEMBLY

Frederick E. Lederman, Sandusky, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed May 2, 1983, Ser. No. 490,576

Int. Cl.⁴ F16C *33/58, 33/44*

U.S. Cl. 384—518 **3 Claims**



1. A preassembled, preloaded bearing assembly adapted to be easily assembled and set in place as a unit between a cylindrical bore of a housing and an axial shaft so as to rotatably support said axial shaft in annular spaced coaxial relationship to said cylindrical bore comprising,

at least one cylindrical support engageable with one of the shaft and the cylindrical bore and including an axially spaced pair of stop members,

a pair of separate ball bearings located in the annular space between the support and the other of the shaft and cylindrical bore, each bearing including inner and outer angular contact races respective to the shaft and cylindrical bore with a circular complement of balls therebetween, said inner and outer races each further including a radially inner edge, said bearings each further including a cage

having oppositely directed snap shoulders snap fitted over said radially inner edges to maintain said bearings as separate units that may be handled separately to thereby ease the assembly of said bearing assembly,

spring means generally concentric to the coaxis of the shaft and cylindrical bore and located in the annular space between a cylindrical surface through the centers of the complements of balls and the other of the shaft and cylindrical bore, the spring means engaging the races respective the other of the shaft and cylindrical bore and axially biasing the races in axially opposed directions, said axial bias being transmitted through the balls to the other races to bias the other races into the stop members to preload the ball bearings and maintain the support and ball bearings as an axially symmetrical unit separable as a unit from the cylindrical bore and shaft and,

a force transfer tube coaxial to and substantially axially coextensive with said spring means and having an axial length sufficient that a snap shoulder fitted over a radially inner edge of said engaged race may extend axially past an end of said force transfer tube, whereby said snap shoulder may also cooperate to radially retain said force transfer tube to, said bearing assembly, and whereby said force transfer tube may also cooperate to transfer pressing force from one ball bearing to the other ball bearing, so that said bearing assembly can be easily set in place as a unit between said cylindrical bore and shaft in a single operation.

4,541,743

PLASTIC RETAINER FOR ROLLER BEARING

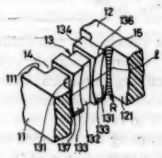
Junichi Hatano, Yokohama, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 20, 1984, Ser. No. 643,022

Claims priority, application Japan, Aug. 26, 1983, 58-131148[U]

Int. Cl.⁴ F16C *33/46*

U.S. Cl. 384—576 **7 Claims**



1. A plastic retainer for roller bearing comprising first and second annular members disposed in axially spaced apart relationship, a plurality of posts connecting said annular members and disposed circumferentially equidistantly, and a pocket for containing a roller formed between two adjacent posts and said annular members, characterized in that the side surface of the post forming said pocket which is adjacent to said first annular member has a planar portion, the connecting portion between said planar portion and said first annular member provides a curved surface concave toward said pocket, and the raidus of curvature of said curved surface is minimum on the pitch circle of the roller and is greater toward at least one side of the radial direction of said retainer.

4,541,744

UNITIZED BEARING ASSEMBLY WITH MOLDABLE RACE MEMBERS AND LABRYINTH SEAL

Frederick E. Lederman, Sandusky, Ohio, assignor to General Motors Coporation, Detroit, Mich.

Filed Nov. 15, 1984, Ser. No. 671,547

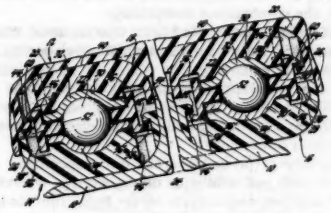
Int. Cl.⁴ F16C *19/10, 33/38*

U.S. Cl. 384—607 **3 Claims**

1. An improved bearing assembly to support a load that is at least partially axial having rolling bearing elements retained by a cage in a circular complement about a bearing axis and received between the pathway portions of a pair of race members spaced to either axial side of said complement, said cage and race members of said improved bearing assembly being adapted for ease of moldability as well as cooperating to provide retention of said race members to said cage and a non rubbing labyrinth seal, comprising,

a substantially circular sealing groove formed in each race member coaxially to the pathway portion thereof, said pathway portion and sealing groove in each race member comprising together a concave surface any radial cross section of which does not have a return bend relative to the bearing axis, so that each race member may be molded by a single pair of mold elements moveable parallel to the bearing axis,

sealing flanges extending to either axial side of said cage, one respective to and receivable within each sealing groove and having a convex surface shaped similarly to the concave surface of its respective sealing groove, so that said cage may also be molded in similar fashion to the race members and so that said sealing flanges may be sized to be received within their respective sealing grooves with a slight clearance therebetween,



at least one retention lip extending radially from each sealing flange into the respective sealing groove, each retention lip covering an area the projection of which upon a plane through the center of the bearing elements is distinct and separate from that of the other retention lips so that said retention lips may be molded with the cage by the same pair of mold elements,

retention tabs extending radially from each race member into said sealing grooves radially past and axially spaced from the respective retention lips received within said sealing grooves, each retention tab having a matching axially directed access slot so that said retention tabs may be molded with the races by the same pair of mold elements, said retention tabs being sufficient in number and circumferentially spaced relative to said sealing grooves so as to block the respective retention lips at every relative rotated position of the race members and cage,

whereby the respective retention tabs and lips cooperate to retain said race members to said cage to prevent axial separation when the bearing is not supporting a load, while the respective moldable sealing grooves and sealing flanges receivable therewithin cooperate to form a convoluted path and a labyrinth seal without rubbing between the sealing flanges and grooves when the bearing is supporting a load.

4,541,745

PRINT HEAD CONSTRUCTION

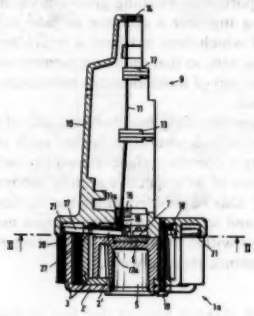
Bernd Gugel, Ulm-Einsingen, Fed. Rep. of Germany, assignor to Mannesmann AG, Duesseldorf, Fed. Rep. of Germany

Filed Nov. 21, 1983, Ser. No. 553,827

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1982, 3243475

Int. Cl.⁴ B41J *3/12*

U.S. Cl. 400—124 **5 Claims**



1. In a print head of the needle or wire stylus variety having a plurality of electromagnetically actuated print needles, wires or styli, the combination comprising

a coil carrier constructed from two separate, nesting, relatively thin walled carrier elements, each having a base and upwardly extending legs which are respectively radially aligned whereby respective two aligned legs pertain to different carrier elements for establishing a yoke and a core for a particular coil, the two elements being secured to each other; and

a plurality of pivotable armatures respectively associated with styli and with pairs of aligned legs whereby one leg of each pair respectively serves as fulcrum for the respective armature.

4,541,746

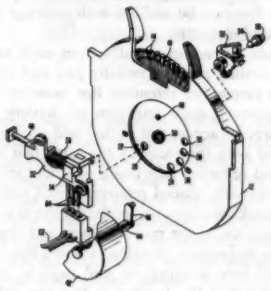
INITIALIZING APPARATUS FOR DAISY WHEEL PRINTER

Kevin L. Bobart; Robert S. Samson, and Iraj D. Shakib, all of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 14, 1983, Ser. No. 542,300

Int. Cl.⁴ B41J *7/76, 7/84*

U.S. Cl. 400—144.2 **10 Claims**



1. A printer comprising an electronic control and an escapement means for escaping on one of plural escapement pitches, a carrier, a print element carried on said carrier and carrying indicia of the escapement pitch and impact level associated with said print element, and impact means for impacting with one of a plurality of impact levels, comprising an initialization means, said initialization means comprising:

a single detection means, comprising a single sensor and a plurality of light transition creating means, for detecting the presence of said print element in a predefined rotary position, the presence of said print element in a predefined lateral position, the indicia indication of escapement pitch and impact level associated with said print element, and

means for synchronizing said electronic control with said print element lateral position and said print element rotary position and

means for conditioning said typewriter to escape in said pitch and to print with said impact level.

4,541,747

MOTOR DRIVE CONTROL CIRCUIT TO RESTRICT MOTOR TEMPERATURE RISE BELOW AN UPPER LIMIT

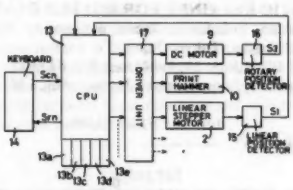
Mamoru Imaizumi; Takashi Fujiwara, and Masanari Kobayashi, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Oct. 31, 1983, Ser. No. 546,949

Claims priority, application Japan, Nov. 10, 1982, 57-197153

Int. Cl.⁴ B41J *1/30*

U.S. Cl. 400—144.2 **19 Claims**



1. A drive control system for controlling a drive motor in response to external command signals, comprising:

first means for obtaining numerical values corresponding to amounts of successive intermittent operations of said drive motor responsive to respective ones of said external command signals, summing the obtained numerical values, and subtracting from a current sum of the numerical values of numerical value corresponding to a non-operation time period during which said drive motor is held at rest between said successive intermittent operations; and

second means for inhibiting the operation of said drive motor responsive to the next command signal, for a length of time corresponding to said current sum after said drive motor has completed each of said intermittent operations.

4,541,748

SERIAL PRINTER WITH INK ROLLER

Ryuichi Okumura; Hidemi Dohi, and Shingo Togawa, all of Tottri, Japan, assignors to Sanyo Electric Co., Ltd. and Tottori Sanyo Electric Co., Ltd., both of, Japan

Filed Jan. 23, 1984, Ser. No. 572,842

Claims priority, application Japan, Jan. 24, 1983, 58-8859; Feb. 17, 1983, 58-25915

Int. Cl.⁴ B41J *27/12, 1/30*

U.S. Cl. 400—470 **20 Claims**

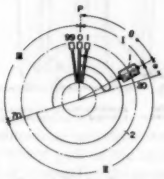
1. A serial printer, comprising:

a daisy wheel having a plurality of radially extending fingers, each of at least some of the fingers having equal lengths and each including a type mounted to an end thereof which types define the general circumferential periphery of the wheel, the serial printer defining a printing position which is circumferentially located on the wheel, the wheel being bi-directionally rotatable to posi-

tion a selected type in the printing position on the circumference of the wheel;

an ink roller disposed in a position circumferentially offset from the printing position by less than 90°, the ink roller being adapted to apply ink to the types of the wheel as the types are rotated therepast; and

means for controlling the rotation of the daisy wheel, the wheel control means causing the wheel to rotate in a first rotational direction and in a second rotational direction, the first rotational direction being defined as the direction in which the shortest circumferential distance is traversed when the daisy wheel is rotated from the printing position to the position of the ink roller, the second rotational direction being defined as the direction which is opposite the first rotational direction, the circumference of the daisy wheel being divided into first, second and third definable regions, the first region extending in the first rotational direction between the printing position and a first boundary position, the first boundary position being



defined as a position on the circumference of the daisy wheel and situated N number of fingers in the first rotational direction from the ink roller position, the second region extending in the first rotational direction between the first boundary position and a second boundary position, the second boundary position being defined as a position on the circumference of the daisy wheel which is at least 180° in the first rotational direction from the first boundary position, the third region extending in the first rotational direction between the second boundary position and the printing position, wherein a type situated in the first region is moved in the first rotational direction to the first boundary position and subsequently moved in the second rotational direction to the printing position, a type situated in the second region is moved in the second rotational direction to the printing position, and a type situated in the third region is moved in the first rotational direction to the first boundary position and subsequently moved in the second rotational direction to the printing position.

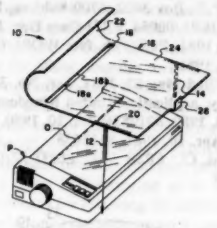
4,541,749

PAPER TRAY AND FOLDER

John B. McCoy, 3521 Split Rail La., Ellicott City, Md. 21043

Filed Apr. 30, 1984, Ser. No. 605,200
Int. Cl.⁴ B41J *11/26*
U.S. Cl. 400—613.2 **4 Claims**

1. A system for handling traction-feed paper having successive pre-folds and flowing end-on and unfolded from a location on a printer comprising: structure defining a slot with rearward and forward edges, for receiving said paper in an upwardly angled direction therethrough, means for holding the slot at said location, means for redirecting the flow of said paper in a forward, downwardly angled direction, means for stacking said paper by causing said end of the paper and each prefold in turn to stop, said means for redirecting comprising an arcuate structure extending from adjacent said slot generally rearwardly in said upwardly angled direction and then upwardly and then forwardly, said means for stacking including a support portion for said paper extending forwardly from said slot and an upright member on said support portion, and said support portion and said arcuate structure being respective parts of a unitary sheet of material.

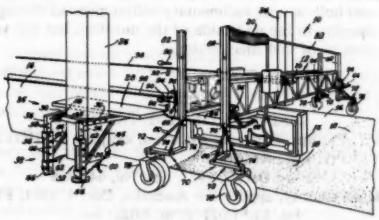


4,541,750

SURFACE SPREADER WITH COLUMN BYPASS

Joe M. Owens, Naperville, Ill., assignor to Master Consolidated Corporation, Dayton, Ohio

Filed Sep. 24, 1981, Ser. No. 305,167
Int. Cl.⁴ E01C *19/18*
U.S. Cl. 404—110 **15 Claims**



1. In a surface spreader for applying particulate material in strip fashion to the surface of freshly-poured concrete, the spreader having an elongated framework structure spanning the concrete, a hopper suspended on the framework structure and adapted to traverse the framework structure from one end to the other to spread material in a strip over the surface of the spanned concrete, and end supports at either end of the framework structure to support the framework structure above the concrete, the improvement comprising:

an apparatus for accommodating and avoiding the interference of a column in line with an end support of the surface spreader, the apparatus including

a. an assembly for attachment to the column for supporting an end of the surface spreader, said assembly including a horizontal shelf and means to affix said shelf to the column at a predetermined elevation in registration with the end of the surface spreader, and

b. ski means mounted at the end of the surface spreader, said ski means being shaped to engage said shelf and support the end of the surface spreader on said shelf and being mounted at approximately the same elevation as said shelf.

4,541,751
METHOD OF PRODUCING AND LAYING A BARRIER STRUCTURE

Ole F. Larsen, P.O. Box 3002, 6700 Esbjerg, Denmark

PCT No. PCT/DK81/00054, § 371 Date Dec. 18, 1981, § 102(e) Date Dec. 18, 1981, PCT Pub. No. WO81/03189, PCT Pub. Date Nov. 12, 1981

PCT Filed May 11, 1981, Ser. No. 336,356

Claims priority, application United Kingdom, May 10, 1980, 8015539; Jun. 18, 1980, 8019836; Jul. 10, 1980, 8022565; Feb. 9, 1981, 8103842; Apr. 10, 1981, 8111438

Int. Cl.[4] E02B *3/00*; E02D *17/00*

U.S. Cl. 405—15 **13 Claims**

1. A method of producing and laying on the ground an elongate structure consisting of at least one layer of flexible, tight and/or permeable and/or porous sheet material (13, 14, 16, 1), which forms at least one longitudinal hollow filled with sedimentary ballast material (19), characterized by a procedure comprising the following steps:

unrolling from a roll (32) said sheet material in its longitudinal direction;

advancing said roll in pace with the speed of said unrolling of said sheet material;

shaping said sheet material into a tube-like configuration comprising at least one longitudinal hollow, in which the underside of said tube-like configuration is provided with at least one longitudinal opening allowing for passage of said sedimentary ballast material;

laying the tube-like configured sheet material on the ground with the opening bottommost;

and subsequently to forming the longitudinal opening filling said hollow with sedimentary ballast material through said opening in the underside of the unrolled, but not yet laid portion of said sheet material.

4,541,752
DISPOSAL OF FINE TAILINGS

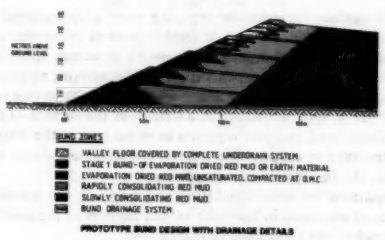
John T. Phillips, Bateman, Australia, assignor to GHD-Dwyer (WA) Pty. Ltd., Australia

Filed Dec. 7, 1982, Ser. No. 447,388

Claims priority, application Australia, Dec. 9, 1981, PF1881

Int. Cl.[4] C02F *1/00*; E02D *17/18*

U.S. Cl. 405—129 **57 Claims**


BUND ZONES
VALLEY FLOOR COVERED BY COMPLETE UNDERDRAIN SYSTEM
STAGE 1 BUND - OF EVAPORATION DRIED RED MUD OR EARTH MATERIAL
EVAPORATION DRIED RED MUD, UNSATURATED, COMPACTED AT O.M.C.
RAPIDLY CONSOLIDATING RED MUD
SLOWLY CONSOLIDATING RED MUD
BUND DRAINAGE SYSTEM
PROTOTYPE BUND DESIGN WITH DRAINAGE DETAILS

1. A method of disposal of slurries of fine tailings material comprising laying a porous drainage level on a subsurface between a leading edge and a trailing edge, construction of a bund upon the porous drainage level and having a front face spaced inwardly from the leading edge of the porous drainage level and a rear face substantially forwardly of the porous drainage level trailing edge for leaving a substantial portion of the porous drainage level exposed, forming a further porous drainage level over the rear face of the bund to be covered by said fine tailings, depositing the slurries of fine tailings in layers behind said bund and at least in part over the porous drainage levels and providing still further porous drainage levels between the layers in the region adjacent said bund and in contact with the further porous drainage level for draining liquid from the layers.

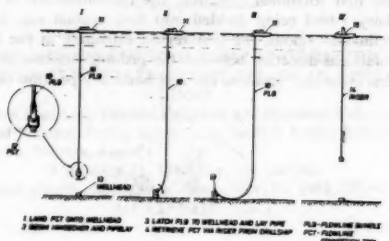
4,541,753
SUBSEA PIPELINE CONNECTION

Carl G. Langner, Spring, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jul. 22, 1983, Ser. No. 516,086

Int. Cl.[3] F16L *1/04*

U.S. Cl. 405—166 **6 Claims**



1. A method for vertically laying a flowline from a pipelay vessel to a subsea structure and then on sea bottom away from the subsea structure, comprising:

positioning the pipelay vessel above the subsea structure;

deploying the flowline vertically from the pipelay vessel to the subsea structure;

manipulating the flowline from the pipelay vessel to stab a flowline connection tool at the terminus of the flowline into a flowline receiver on the subsea structure, the flowline receiver having a funnel shape which mates with the shape of the flowline connection tool and which guides the flowline connection tool into the subsea structure;

hinging the flowline over from a vertical position to a horizontal position adjacent to the subsea structure; and

vertically laying the flowline from the pipelay vessel on the seafloor away from the subsea structure.

4,541,754
DEVICE AND PROCESS FOR LOWERING A CONNECTOR SUSPENDED FROM GUIDE LINE TO A GUIDE COLUMN INSTALLED ON AN UNDERWATER STATION

Yvon Castel, and Michel Iato, both of Pau, France, assignors to Societe Nationale Elf Aquitaine (Production) Tour Aquitaine, Paris la Defense, France

Filed Jun. 21, 1983, Ser. No. 506,495

Claims priority, application France, Jul. 6, 1982, 82 11816

Int. Cl.[4] E21B *15/02*

U.S. Cl. 405—168 **9 Claims**

1. A device for lowering a connector (15) from a floating structure to a guide column (33) on a subsea installation, said connector (15) being suspended from a guideline (19) connected with said floating structure, comprising in combination:

a support means (2);

rod means fixed to said support means and connecting said support means with said floating structure;

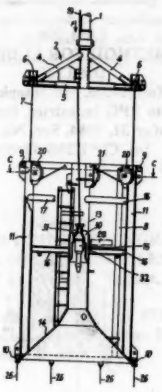
a module (3) having a vertical axis, spaced below said support means and including structural members arranged about said axis;

a cable means (7) suspending said module from said support means;

means for connecting said connector (15) to said module (3);

means for guiding said module (3) over said guide column (33) as the device is lowered and approaches the guide column;

means for maintaining constant tension in the guideline (19) during lowering;



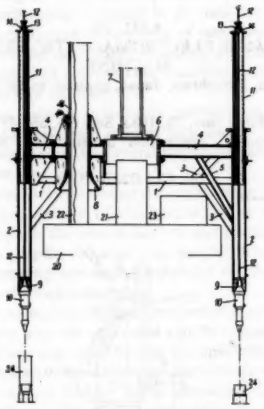
and means for maintaining said cable means (7) under tension when the downward pull of the module suspended from the support (2) is lessened as the connector (15) and guide column (33) become connected.

4,541,755

DEVICE AND PROCESS FOR LOWERING AND CONNECTING THE FOUR GUIDE LINES TO GUIDE POSTS OF AN UNDERWATER STATION

Yvon Castel, and Michel Iato, both of Pau, France, assignors to Societe Nationale Elf Aquitaine (Production) Tour Aquitaine, Paris, France

Filed Jun. 10, 1983, Ser. No. 503,331
Claims priority, application France, Jun. 25, 1982, 82 11135
Int. Cl.[4] E21B *33/035*
U.S. Cl. 405—195 **10 Claims**



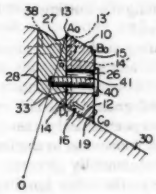
1. A device for lowering and connecting four guide lines to respective guide posts installed on an underwater station comprising a well apparatus having a guide column, a well head and four guide posts at said station whose upper ends are situated at a level substantially lower than that of the well head, the device being adapted to be guided in downward movement along a guide line secured to the guide column, characterized in that the device comprises a frame with four radial arms (4) one of which carries a guide funnel (8) adapted to slide along the guide line and comprising rollers (40) adapted to cooperate with helical ramps (41) of the guide column so as to allow angular orientation of the frame, whereas at a longitudinal axis of the frame a central connector (6) is fixed to the radial arms (4) and adapted to be locked to the well head (21), the end of each arm (4) being firmly secured to a first fixed tube (2), a second tube (11) telescopically slidable within said first fixed tube (2), the two tubes having passing therethrough a cable (12) carrying at its end an orientable connector (10), means for retaining the cable in the second tube (11), so that the second tube accompanies the cable in its downward movement and slides inside the first tube (2) as well as means for providing said sliding.

4,541,756

REVOLVING CUTTING TOOL

Masao Kubota, 22-7, Narimasu 2-chome, Itabashi-ku, Tokyo, Japan

Filed Sep. 24, 1982, Ser. No. 423,173
Claims priority, application Japan, Oct. 1, 1981, 56-154844
Int. Cl.[3] B27G *13/02*; B23C *5/02*
U.S. Cl. 407—45 **4 Claims**



1. A rotary cutting tool comprising:

an elongated cutter body having a center axis of rotation; at least one recess in said body forming an inclined plane with respect to said axis;

at least one elongated cutting tip in said recess, said tip having a plate-like shape and a cutting edge profile which is defined by an intersection between a surface of revolution created by turning a contoured line segment about said center axis of said cutter body and said plane inclined with respect to said axis;

a flat front rake surface of said tip in said plane and functioning as a regrindable surface for reproducing the edge profile of the tip when the edge is worn out;

a top clearance surface of said tool being defined by a part of a cylindroid surface being generated by displacing each point in the cutting edge profile line in a fixed direction so as to make a predetermined constant tool angle with said rake surface;

a lower end of said tip having a surface parallel to the clearance surface;

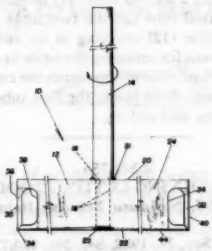
said at least one recess for mounting said tip at the periphery of said cutter body including a front wall having means for fixing said tip thereto and a bottom wall, said front wall being inclined to said cutter body axis at the same angle as said rake plane of said tip and forming a corresponding plane surface for detachably connecting the rake surface plane thereto, said bottom wall being provided with a guiding surface having a parallel relationship to a directrix of said cylindroid surface to effectively cause an upwardly parallel displacement of the tip along the guiding surface toward the front wall as the lower end of said tip slides therealong, said cutting tip having means permitting said displacement whereby an original set condition of the cutting edge profile is constantly achievable.

4,541,757

PROPELLANT MILLING TOOL, BUTTERFLY CUTTER

Keith B. Reynolds, Brigham City; Trevor R. Freston, Hyrum; Richard N. Ord, and James T. Houghton, both of Brigham City, all of Utah, assignors to Morton Thiokol Inc., Chicago, Ill.

Filed Jul. 11, 1983, Ser. No. 512,307
Int. Cl.[4] B23C *5/02, 5/10*
U.S. Cl. 407—53 1 Claim



1. A cutting tool for milling solid propellant for rocket motors, said propellant having a surface, comprising:

an elongated rectangular cutting arm having a first end and a second end, and

an arbor for holding said cutting arm, said arbor having a longitudinal axis and being rigidly attached at one end to said cutting arm at a central location thereon between said first and second ends with said cutting arm extending substantially perpendicularly thereto, the dimension of said cutting arm transverse to the longitudinal axis of said arbor being substantially greater than the dimension thereof parallel to the arbor longitudinal axis,

said cutting arm having a straight cutting blade and an associated inwardly located hole at each of said first and second ends with said cutting blades facing in opposite directions in cutting positions that are substantially parallel to the longitudinal axis of said arbor as said arbor is rotated, and with each of said holes being disposed in contiguous operative relation with its associated cutting blade such that, as the surface of the propellant is being cut, the resulting chips pass through the hole and are thrown away from the propellant surface by the centrifugal force of the rotating blade,

wherein said cutting arm further includes oppositely facing first and second surfaces, ooppositely facing third and fourth surfaces, and oppositely facing fifth and sixth surfaces, with said first and second surfaces each positioned approximately perpendicular to each of said third and fourth surfaces, and with said fifth and sixth surfaces each positioned approximately perpendicular to each of said first, second, third and fourth surfaces,

wherein said arbor is attached to said cutting arm in extending perpendicular relation to said first surface,

wherein each of said cutting blades includes a knife edge with one knife edge coincident with an edge of each of said third and fifth surfaces and the other knife edge coincident with an edge of each of said fourth and sixth surfaces,

wherein the angle between said third and fifth and the angle between said fourth and sixth surfaces are each about 85°,

wherein a knife edge is formed at the junction of the portion of said second and third surfaces adjacent said first end of said cutting arm,

wherein a knife edge is formed at the junction of the portions of said second and fourth surfaces adjacent said second end of said cutting arm,

wherein the angle between said second and third surfaces at the knife edge formed thereat is about 85°, and

wherein the angle between said second and fourth surfaces at the knife edge formed thereat is about 85°,

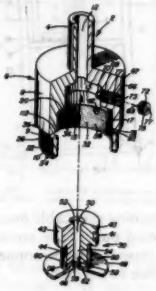
whereby to avoid drag and friction of said cutting arm on the surface of the propellant being cut and thereby avoid heating of said cutting tool during use.

4,541,758

MEANS AND METHOD FOR LUBRICATING CORE DRILLS

Robert G. Frank, Murrysville, and Joseph A. Noca, Irwin, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 31, 1984, Ser. No. 615,975
Int. Cl.[4] B23B *35/00*
U.S. Cl. 408—1 BD 18 Claims



1. A method of drilling a chamfered hole in an article, with a core drill having chamfering and inner and outer drilling surfaces, comprising the steps of:

(a) drilling a hole in the article with the core drill;

(b) chamfering the hole with the core drill;

(c) supplying lubricating/cooling fluid to the inner and outer drilling surfaces during said drilling steps; and

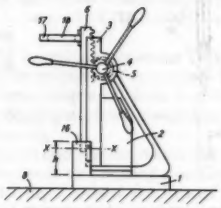
(d) supplying lubricating/cooling fluid from within the core drill to the chamfering surface during said chamfering step.

4,541,759

PORTABLE ELECTROMAGNETIC DRILLING MACHINE

Akio Miyoshi, Hiroshima, Japan, assignor to Sankyo Co., Ltd., Japan

Filed Nov. 30, 1983, Ser. No. 556,491
Claims priority, application Japan, Nov. 30, 1982, 57-182399[U]
Int. Cl.[4] B23B *45/14*
U.S. Cl. 408—76 3 Claims



1. A portable electromagnetic drilling machine comprising the combination of:

(a) a pneumatically driven drill head and drill bit secured to

a portable drill stand which includes a rigid upright frame member;

(b) an electromagnetic base attached to said frame which engages a magnetic workpiece and is provided with pneumatic cooling means exhausted from said drill head; and

(c) a movable drill head support tracking perpendicular to said base on said rigid member, including means supporting said drill head, and moving said drill head and bit toward and away from said base and workpiece along said upright member.

4,541,760

APPARATUS FOR DRILLING, ENGRAVING AND CARVING OPHTHALMIC LENSES

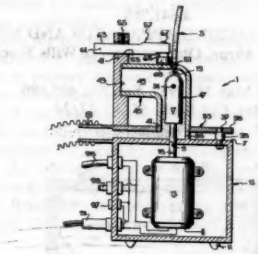
Georges Zoueki, 4812 av. Verdun, Verdun, Quebec, Canada H4G 1N1

Filed Jul. 23, 1984, Ser. No. 633,513

Claims priority, application Canada, Jun. 18, 1984, 456824

Int. Cl.[4] B23C *3/12*

U.S. Cl. 409—137 **20 Claims**



1. An apparatus for drilling, engraving and carving ophthalmic lenses, said apparatus comprising:

(a) a base having an upper surface provided with an opening;

(b) an electrical motor mounted in the base for rotating a shaft passing through the opening of said base;

(c) a tool holder for detachably mounting a drilling, engraving or carving end mill onto the rotatable shaft above the upper surface of the base; and

(d) a working support detachably mounted on the upper surface of the base, said support including:

a platform provided with a central hole wide enough to give room to the tool holder;

means for detachably mounting the platform on, and parallel to, the upper surface of the base with the tool holder passing through the central hole of said platform;

a guide holder rigidly mounted onto the platform, said guide holder extending upwardly in parallel relationship with respect to the tool holder; and

a L-shaped tube having one end fitted into the central hole of the platform and the other end rigidly connected to the guide holder, said tube having an upwardly extending portion with an internal diameter and a height sufficient to receive the tool holder while allowing the end mill mounted thereto to project outwardly from the tube through a small opening provided therein said tube also having a perpendicularly extending portion with an upper surface from which projects the end mill, said upper surface of said perpendicularly extending portion being useful as a support for a lens when the same is drilled, engraved or carved with the end mill.

4,541,761

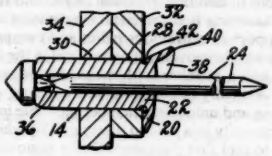
EASILY REMOVED BLIND RIVET

William D. Bryce, Jr., Seymour, Conn., assignor to USM Corporation, Farmington, Conn.

Filed Sep. 26, 1983, Ser. No. 535,436

Int. Cl.[4] F16B *13/04*

U.S. Cl. 411—34 **4 Claims**



1. A blind rivet assembly adapted to be placed through the opening in a workpiece comprising:

a. a rivet having a hollow body portion and an interconnected flange normal to the body portion;

b. a mandrel having a head and an elongated stem projecting from said flange;

c. said mandrel stem being adapted, upon pulling said stem, to upset said rivet body portion so that the rivet flange would rest against one surface of a workpiece and the upset rivet body portion against the opposite surface of a workpiece with said rivet body and flange remaining intact;

d. said interconnection of said flange and said body portion has a reduced area to provide a localized area of weakness between said flange and said body portion, said reduced area extending into the under surface of said flange, said flange having a tab means associated therewith, said tab means being adapted to be pulled by a gripping tool to remove said flange from said body portion along said localized area of weakness with a portion of said body portion protruding beyond the surface of the workpiece.

4,541,762

APPARATUS FOR LOADING AND/OR UNLOADING MACHINE TOOLS OR THE LIKE

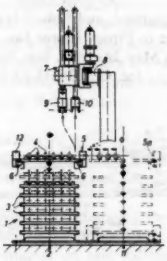
Bernd Tischler, Heilbronn, and Kurt Euerle, Neuenstadt-Cleversulzbach, both of Fed. Rep. of Germany, assignors to KK Automation Klaus Th. Kramer GmbH & Co., Fed. Rep. of Germany

Filed Dec. 22, 1982, Ser. No. 452,288

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1981, 3151316

Int. Cl.[4] B65G *60/00*

U.S. Cl. 414—32 **3 Claims**



1. An apparatus for loading and unloading work pieces from a work piece store comprising:

an unloading station for a stack of pallets loosely positioned

one on top of the other and each pallet having means for accommodating the work pieces;

a restacking station adjacent said unstacking station;

a horizontal rail extending in first direction (X);

a transporter for picking up the uppermost pallet from said stack, lifting it to a loading and/or unloading level, shifting it horizontally in incremental steps separated by idle periods in said first direction (X) to said restacking station and lowering it at the restacking station and settling it on a support or a previous pallet and comprising a carriage mounted for movement on said rail in the horizontal direction and a member with means for engaging said pallets and vertically movable on said carriage; and

a loading and unloading member movable in timed sequence horizontally in a second direction (Y) which is perpendicular to said first direction (X) for removing or depositing workpieces from or on the pallet which is on said loading and/or unloading level during the idle periods.

4,541,763

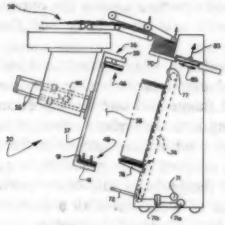
APPARATUS FOR FORMING A STACK OF SIGNATURES

Mohanjit S. Chandhoke, Plattsburgh, and Michael Duke, Rouses Point, both of N.Y., assignors to Harris Graphics Corporation, Melbourne, Fla.

Filed Jul. 28, 1983, Ser. No. 518,015

Int. Cl.⁴ B65H *31/30, 31/32*

U.S. Cl. 414—45 **9 Claims**



8. Apparatus comprising a stacking means for forming a stream of signatures into a stack, a clamping mechanism being movable to the stacking means to clamp a stack of signatures and withdraw the stack of signatures from the stacking means, said stacking means adapted to form a succeeding stack to replace the stack that has been removed therefrom, said clamping means being adapted to deliver an end board to the stacking means, and the stacking means being adapted to associate the end board with the succeeding stack formed by said stacking means.

4,541,764

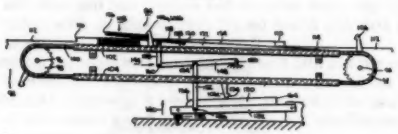
DOCUMENT STACKING AND CONVEYING APPARATUS

Edward Govan, Stratford, and Robert Irvine, Riverside, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed May 24, 1984, Ser. No. 613,560

Int. Cl.⁴ B65H *39/02*

U.S. Cl. 414—52 **6 Claims**



1. A document stacking and conveying apparatus comprising;

A. a pair of elongate document stacking and conveying devices arranged in parallel relationship, each of said document stacking and conveying devices having means for accumulating a plurality of documents into a stack adjacent one end of said document stacking and conveying device and for intermittently feeding said stack beyond said one end,

B. a third elongate stacking and conveying device disposed in perpendicular relationship to said pair of document stacking and conveying devices adjacent said one end thereof for receiving said stacks therefrom and for stacking said stacks one on top of another, said third document stacking and conveying device comprising;

1. means adjacent said one end of said pair of document stacking and conveying devices for receiving and supporting said stacks therefrom,

2. conveyor means extending along said third document stacking and conveying device for sequentially moving one of said stacks toward the other stack while said other stack remains stationary on said stack receiving means and for moving both said stacks after said one stack has been deposited on top of said other stack, and

3. means disposed between said stacks for compressing said other stack toward said receiving and supporting means and for guiding said one stack upwardly from said receiving and supporting means whereby said one stack is deposited on top of said other stack by said conveyor means while said other stack remains stationary.

4,541,765

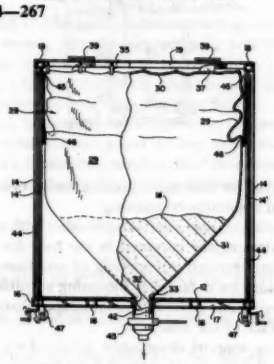
TRAILER UNLOADING APPARATUS AND METHOD

James W. Moore, Akron, Ohio, assignor to Wills Trucking, Inc., Richfield, Ohio

Filed May 18, 1983, Ser. No. 495,690

Int. Cl.⁴ B65G *65/30, 67/24*

U.S. Cl. 414—267 **10 Claims**



1. Apparatus for selectively compartmentalizing a rectangular container, for transporting comminuted bulk material, having a planar floor provided with discharge openings therein and side and end walls extending upwardly from the floor comprising:

a plurality of collapsible rectangular liners, each said liner having side walls and end walls substantially coextensive in height with the container side and end walls, and having a collapsible funnel-shaped base adapted to extend below said side and end walls of said liner, said base being further adapted to communicate with a discharge opening in the planar floor;

means to selectively position said liners within the container with said side and end walls of each said liner substantially extended and said base collapsed upon the planar floor, and communicating with a corresponding discharge opening, to permit each said liner to receive material; and,

means to selectively bodily lift at least one said liner and extend said funnel-shaped base to facilitate gravity dis-

charge of material through a corresponding discharge opening, said means being attached to opposite sides of said liner along the junction between its side walls and the funnel-shaped base.

4,541,766

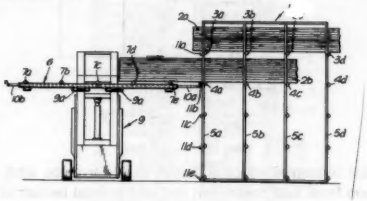
DEVICE FOR HANDLING PACKS OF ELONGATED ARTICLES, ESPECIALLY LUMBER PACKS

Karl Dahl, St. Olavs Plass 1, N-Oslo 1, Norway

Continuation-in-part of Ser. No. 414,339, Aug. 9, 1982, abandoned. This application Jul. 18, 1984, Ser. No. 631,517

Int. Cl.[4] B65G *1/04*

U.S. Cl. 414—277 **20 Claims**



18. A device for handling of elongated lumber packs in a warehouse, comprising:

(a) a frame for holding the lumber pack;

(b) a plurality of parallel rollers mounted on the top of the frame to receive the pack, the pack rolling on the rollers during movement; and

(c) at least one extensible support arm mounted to the frame below the rollers in a tubular receiver, the arm including a connector for securely connecting the arm to a storage rack, the arm and receiver forming an abutment against horizontal reaction forces which could move the frame away from the rack by creating a skewed relationship wherein the support arm is locked within the receiver.

4,541,767

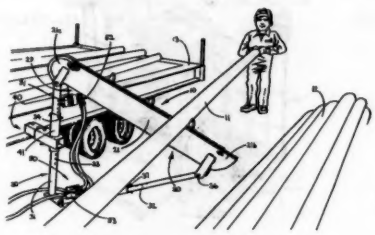
PIPE LOADER

Donald L. Daberkow, Rte. 3, Box 284A, Grand Island, Nebr. 68801

Filed Dec. 20, 1982, Ser. No. 451,519

Int. Cl.[4] B60P *1/36*

U.S. Cl. 414—523 **1 Claim**



1. A conveyor, for use in connection with a vehicle having a bed, for transferring elongate objects back and forth between the bed of the vehicle and a location proximal to the bed, said conveyor comprising:

(a) a housing having first and second ends

(b) means for mounting said housing such that its first end is adjacent to and slightly above a side of the bed of the vehicle and its second end extends outwardly from said side of the vehicle and including means for varying the angle between the housing and the bed of the vehicle,

(c) continuous conveyor means mounted within the housing between the first and second ends, said conveyor means having at least one means for carrying at least one of said elongate objects at its approximate center point from said bed to said location and from said location to said bed; and

(d) conveyor power means mounted on the housing wherein said continuous conveyor means includes a roller chain and sprockets; the said carrying means is block means secured to links of the roller chain; the said housing mounting means further includes means for pivoting said housing about a vertical axis from an outwardly extended operating position to a transport position substantially parallel and adjacent to the bed of the vehicle; the said pivoting means includes: a vertical sleeve operably affixed with respect to the vehicle; a vertical framework member attached to the first end of the housing for pivoting within the sleeve; and means for supporting said framework member at varying heights with respect to the vertical sleeve, and means for adjustably and removably supporting said vertical sleeve to said bed of said vehicle, whereby the distance of the conveyor from the vehicle can be varied and the conveyor can be selectively dismounted from the vehicle, wherein the said elongate object is substantially longer than the transverse width of the conveyor means and is unstable when resting thereon; and whereby the conveyor assists an individual who controls the free end of the elongate object in moving the elongate object between the bed of the vehicle and the said location.

4,541,768

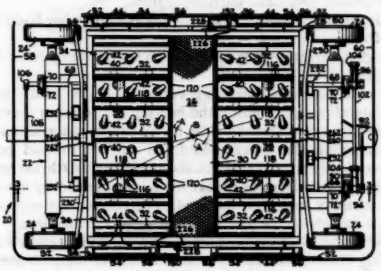
CONTAINER TRAILER

William B. Walker, Orlando, Fla.; Paul D. Justus, Gruver, Iowa, and Michael K. Bloomfield, Orlando, Fla., assignors to FMC Corporation, Chicago, Ill.

Filed Oct. 13, 1983, Ser. No. 541,743

Int. Cl.[4] B60P *1/52*

U.S. Cl. 414—535 **32 Claims**



1. An apparatus for supporting a container at a roll plane for selectively allowing movement of a container about an axis normal to said plane and along a path, comprising:

means defining a plurality of rollers having container supporting surfaces movable into positions tangent to said roll plane for supporting the container for movement along said path;

means defining a plurality of wheels having axes of rotation intersecting said normal axis and having container supporting surfaces movable into positions tangent to said roll plane; and

elevation changing means for changing the elevation of said wheels to a height tangent to said roll plane for jointly supporting the container on said rollers and said wheels and for thereafter changing the elevation of said rollers to a position below said roll plane for supporting the container solely on said wheels at said roll plane for permitting rotation of the container about said normal axis, said roller means and said wheel means being limited to move-

ment by said elevation changing means between a position wherein their container supporting surfaces are tangent to said roll plane and a position below said roll plane.

4,541,769

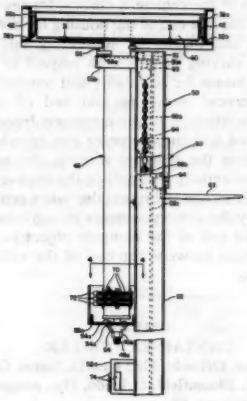
STACKER CRANE FORK MOUNTING SYSTEM

Gerald C. Clemens, Minneapolis, Minn., assignor to Twin City Monorail, Hamel, Minn.

Filed Jul. 18, 1983, Ser. No. 514,513

Int. Cl.[4] B65G *1/02*

U.S. Cl. 414—633 **6 Claims**



1. A mounting system for stacker cranes for handling materials in warehouse storage racks, comprising,

a movable overhead carriage frame,

a depending cylindrical supporting post member fixed to the frame,

a radial/thrust bearing mounted on the bottom portion of the post,

a crane assembly extending vertically below said post and laterally supported by the bearing for rotation thereon,

roller means mounted on the top of said crane assembly and engaging the outer cylindrical surface of said post in vertically spaced relation above said radial/thrust bearing to provide lateral support for a load carried by the crane assembly to permit the load to be rotated through an arc of 360 about the axis of said post as a center line,

said crane assembly including load-carrying means extending radially outwardly from one side of the post member, and

power means mounted on said crane assembly for raising and lowering said load-carrying means.

4,541,770

ASSEMBLING OR PROCESSING SYSTEM

Tatsuya Niinomi, and Yoshio Matsumo, both of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

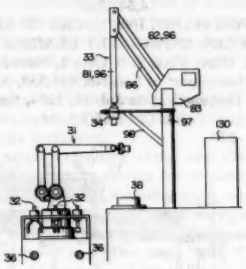
Continuation of Ser. No. 321,672, Nov. 16, 1981, abandoned. This application Nov. 17, 1983, Ser. No. 552,795

Claims priority, application Japan, Nov. 17, 1980, 55-160789; Oct. 30, 1981, 56-173016

Int. Cl.[4] B66C *23/00*

U.S. Cl. 414—730 **21 Claims**

1. An assembling or processing system comprising: a first industrial robot the end of which has at least three degrees of freedom for movement in horizontal and vertical planes; a second industrial robot the end of which has at least three degrees of freedom for movement in horizontal and vertical planes; connecting means for connecting the end of said first industrial robot to the end of said second industrial robot; a sensor provided on said connecting means and adapted to sense the positional deviation between the ends of said first and second industrial robots; and a controller for controlling the operation of said first and second industrial robots; wherein



said first industrial robot is driven in accordance with an instruction from said controller, and said second industrial robot is controlled in accordance with a signal from said sensor to follow-up the movement of said first industrial robot.

4,541,771

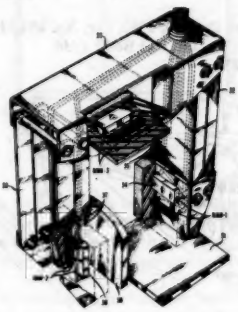
ROBOT HAVING MAGNETIC PROXIMITY SENSOR AND MANUFACTURING METHOD USING SAME

Gerardo Beni, Old Bridge; Susan Hackwood, Freehold, and Lawrence A. Hornak, Ocean, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 31, 1983, Ser. No. 480,826

Int. Cl.[4] B25J *17/02*

U.S. Cl. 414—730 **11 Claims**



1. A robot comprising

a robot hand having at least two moveable fingers for gripping a magnetized object,

a reentrant-loop magnetic first sensor incorporated in one of said fingers and having a first magnetization direction so as to sense said object when it lies outside the region between said fingers, and

a reentrant-loop magnetic second sensor incorporated in another of said fingers and having a second magnetization direction different from said first direction so as to sense said object when it lies within said region.

4,541,772
PUMP WITH MAGNETIC BEARINGS

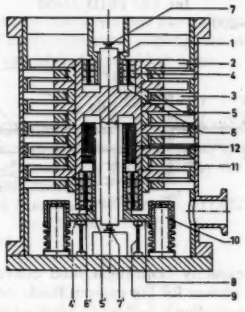
Willi Becker, Braunfels, Fed. Rep. of Germany, assignor to Arthur Pfeiffer Vakuumtechnik Wetzlar GmbH, Asslar, Fed. Rep. of Germany

Filed Oct. 19, 1983, Ser. No. 543,264

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1982, 3239328

Int. Cl.⁴ F01D *1/36;* **F04D** *29/66*

U.S. Cl. 415—90 **2 Claims**



1. A pump with radial and axial bearing means, said radial bearing means being magnetic and comprising a rotor part and a stator part, said stator part comprising damping means in the form of an electrically conductive ring, and a pump housing wherein at least one magnetic bearing stator is carried by a platform which is mounted on springs and which is connected to said pump housing by means of an oscillation damper, said stator part being provided with two magnetic bearing stators for each of which the spring constant of said springs is substantially equal to the spring constant of the magnetic bearing.

4,541,773
SAFETY DEVICE FOR MOTOR PUMP GROUP

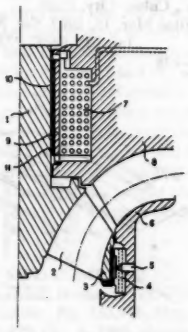
Michel Drevet, Lyons, France, and Jean Trouillet, Fontaine-Valmont, Belgium, assignors to Jeumont-Schneider Corporation, Cedex, France

Continuation of Ser. No. 269,648, Jun. 2, 1981, abandoned. This application Dec. 6, 1984, Ser. No. 679,098

Claims priority, application France, Jun. 2, 1980, 80 12179

Int. Cl.⁴ F01D *25/16;* **F04D** *29/04*

U.S. Cl. 415—111 **3 Claims**



1. Safety device for a motor-pump assembly for pumping fluid under pressure comprising a vane wheel integrally connected to a vertical shaft driven in rotation, and emplaced in a pump body, the rim of said wheel normally being horizontally guided by a hydrostatic bearing, characterized in that the safety device comprises a bushing disposed coaxially around said vertical shaft, and means supporting said bushing on an inner wall of said pump body and providing a space horizontally between the interior of said bushing and the exterior of said shaft for flow of fluid therebetween and for causing said shaft and said bushing with fluid therebetween to constitute an inoperative hydrodynamic bearing when said shaft is normally guided by said hydrostatic bearing and to constitute an operative hydrodynamic bearing, that prevents contact of said vane wheel and said hydrostatic bearing, solely by reduction of said space when said hydrostatic bearing fails and permits said shaft to move horizontally toward said bushing, said bushing having labyrinth seal means including a plurality of cavities for limiting the flow of fluid in said space, whereby the dynamic characteristics of said shaft are substantially unaffected by the presence of said hydrodynamic bearing when said hydrostatic bearing is operative and whereby damage to said motor-pump assembly upon failure of said hydrostatic bearing is prevented by operation of said hydrodynamic bearing.

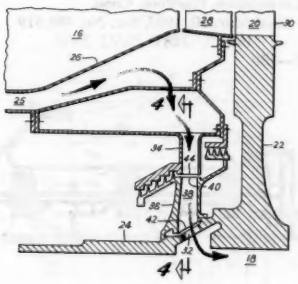
4,541,774
TURBINE COOLING AIR DESWIRLER

Harold P. Rieck, West Chester, and Ralph A. Kirkpatrick, Mason, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 402,007, Jul. 26, 1982, abandoned, which is a continuation of Ser. No. 145,543, May 1, 1980, abandoned. This application Aug. 1, 1983, Ser. No. 518,762

Int. Cl.⁴ F01D *5/08*

U.S. Cl. 415—115 **1 Claim**



1. In a gas turbine engine having a compressor, a combustor, a rotating turbine section around a central engine axis with associated turbine rotors and a rotating turbine shaft, and a cooling air circuit for providing cooling air into said rotating turbine section through holes in said shaft, said cooling air circuit including means for directing said cooling air into said rotating turbine section with a minimum pressure loss and maximum decrease in temperature, comprising in combination:

(a) a nozzle for receiving said cooling air in a direction radially inward and substantially perpendicular to said central engine axis, said nozzle being of the convergent type such that in passing through said nozzle the velocity of said air is increased, the temperature and pressure of said air are decreased and said cooling air exits said nozzle at a direction substantially tangential to and in the same direction of rotation as said rotating turbine shaft; and

(b) a deswirler directly attached to said turbine shaft for rotation therewith, wherein said deswirler includes a plurality of internal turning vanes which extend backwardly in the direction of said rotation and form passages which curve progressively from said substantially tangential direction toward the perpendicular to said central engine axis, and wherein said turning vanes and passages

are rotated away from the cooling air exiting said nozzle, and wherein said passages further comprise:

(i) entrance regions between said vanes which are aligned in serial flow relationship with the cooling airflow exiting said nozzle for aerodynamically accepting said exiting cooling air and wherein said entrance regions initiate a transformation of the substantially tangential velocity of the airflow exiting said nozzle into radial and tangential components by curving the cooling airflow in a radially inwardly direction;

(ii) intermediate regions having a progressively increasing cross-sectional area for decelerating and diffusing said cooling air and for continuing to curve the direction of said cooling airflow in a radially inward direction thereby continuing the transformation of cooling air tangential velocity into radial and tangential components such that said tangential component generally matches the rotational velocity of said turbine shaft; and

(iii) exit regions between said vanes, which are generally aligned in serial flow relationship with said holes in said turbine shaft for aerodynamically directing said cooling air into said turbine shaft,

wherein said deswirler passages convert approach velocity head of the cooling air entering said entrance regions into static pressure which static pressure is greater than the pressure of the cooling air entering said deswirler and minimally less than the pressure of the cooling air entering said nozzle and wherein the temperature of said cooling air exiting said deswirler is lower than that of the cooling air entering said nozzle.

4,541,775

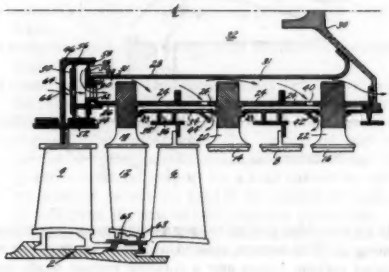
CLEARANCE CONTROL IN TURBINE SEALS

Edward J. Hovan, Manchester, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Mar. 30, 1983, Ser. No. 480,519

Int. Cl.⁴ F01D *25/12, 5/08*

U.S. Cl. 415—180 **4 Claims**



1. In a gas turbine:

a rotor having at least two disks;

seal sleeves extending between the disks and supported by flanges on the discs and having sealing elements on their outer periphery;

one end disk carrying a sealing member having at least one inwardly extending sealing flange;

a row of vanes adjacent one end disk and at least one other row of vanes between the disks;

a sealing ring carried by the inner ends of said row of vanes and having an outer sealing surface cooperating with said sealing flange;

a sleeve extending through the rotor from said sealing member and forming with the sealing member and sealing sleeves a chamber enclosing the inner portions of the rotor disks;

said sleeve also forming inwardly of the sleeve a pressurized compartment for cooling fluid for the rotor, said cooperating sealing flange and outer sealing surface providing a clearance space for the flow of fluid from the compartment to enter the chamber.

4,541,776

CENTRIFUGAL BLOWER FOR HOT FLUIDS

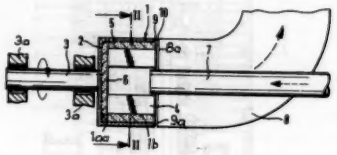
Christian O. Schön, Römerstrasse 1, D-7590 Achern 18, Fed. Rep. of Germany

Filed Aug. 26, 1983, Ser. No. 526,918

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1982, 3232433; Sep. 25, 1982, 3235585

Int. Cl.⁴ F01D *11/08*

U.S. Cl. 415—200 **37 Claims**



1. A high-capacity centrifugal fluid conveying machine, particularly a blower for hot gaseous fluids, comprising:

(a) a rotor including a hollow housing which constitutes a body of rotation, and vanes extending generally radially inwardly from said housing and consisting at least in part of material resistant to aggressive fluids, said housing having an internal surface;

(b) insulating means adjacent to said internal surface and arranged to rotate with said housing, said insulating means including a plurality of plate-like components each of which consists at least in part of heat-insulating and highly heat-resistant material, and each of said plate-like components cooperating with an adjoining plate-like component to define a channel extending generally radially of said housing;

(c) means for driving said rotor;

(d) first tubular means for admitting fluid into said housing; and

(e) second tubular means for receiving fluid from said housing.

4,541,777

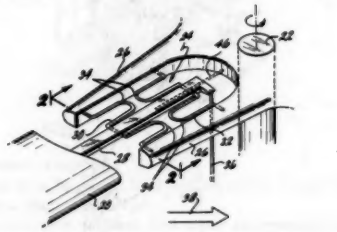
LOW DRAG, BEARINGLESS ROTOR HEAD FOR HELICOPTERS

Evan P. Sampatacos, Cypress, Calif., assignor to Hughes Helicopters, Inc., Culver City, Calif.

Filed Mar. 15, 1982, Ser. No. 358,248

Int. Cl.⁴ B64C *27/38*

U.S. Cl. 416—138 **17 Claims**



1. In a helicopter having a hub-to-blade, bearingless coupling, an improvement comprising:

a rotary hub having a plurality of radially extending and generally planar hub arms;

a blade having a blade shank proximate to said hub arms; and

planar elastic means for coupling said blade shank to said hub arms, said means being disposed between a pair of said hub arms in a plane of flexure parallel to the plane defined by said hub arms, said planar elastic means characterized by longitudinal cross section transverse to said plane of said hub arms which cross section is substantially smaller than the longitudinal cross section of said hub arms, whereby a rugged, inexpensive, low drag, bearingless flexure is provided for hub-to-blade couplings in a helicopter,

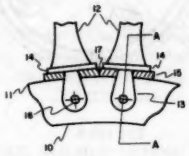
wherein said means comprises two pairs of elastic elements, each pair of elastic elements coupling said blade shank to an adjacent one of said pair of hub arms.

4,541,778

PIN ROOTED BLADE BIAXIAL AIR SEAL

James D. Adams, Palm Beach Gardens, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 18, 1984, Ser. No. 611,652
Int. Cl.[4] F01D *5/22, 5/30*
U.S. Cl. 416—193 A **1 Claim**



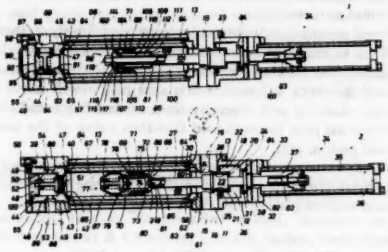
1. A rotor assembly comprising a rotor having a circumferential blade mount rail; a plurality of blades circumferentially spaced around the outer rim of said rotor leaving a slot between adjacent blades for the assembly, thermal expansion and efficient operation of said rotor assembly, each blade having a platform from which a pair of parallel, slotted roots circumferentially dimensioned less than said platform extend radially inward to straddle said rail and are secured thereto by a fastener that passes through said roots and said rail, wherein said roots join near said platform in an arcuate curve radially spaced from the perimeter of said rail; and an elastometric seal bonded to the radially inner surface of said platform and having first and second parallel sections in axial alignment with said rotor and joined by a third, crossbar, section perpendicular to said parallel sections and in radial contact with said rail, wherein the radial dimension of said seal is slightly greater than the separation of said platform from said rail so as to cause said seal to be compressed when said blade is secured to said rotor, the axial dimension of said crossbar section being approximately equal to the axial dimension of said rail and the combined circumferential dimensions of said crossbar section, and said first and second parallel sections being equal to said circumferential spacing between said blades, such that the length of said rail under each said blade is sealed to said blade by said crossbar section in cooperation with said parallel sections, and the slot between said circumferentially spaced blades is sealed by the abutting parallel sections of adjacent blades.

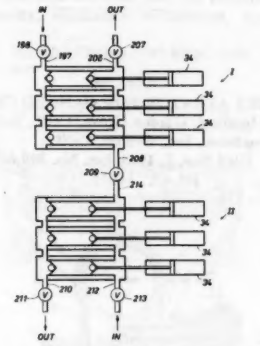
4,541,779

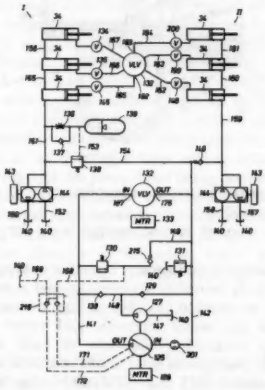
MUD PUMP

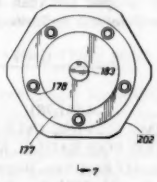
J. C. Birdwell, 8535 Glencrest, Houston, Tex. 77061

Continuation-in-part of Ser. No. 133,948, Mar. 25, 1980, abandoned, Ser. No. 309,979, Oct. 8, 1981, abandoned, Ser. No. 220,527, Dec. 29, 1980, abandoned, and Ser. No. 348,497, Feb. 11, 1982, abandoned. This application Jan. 4, 1983, Ser. No. 455,509
Int. Cl.[4] F04B *23/06, 9/10*
U.S. Cl. 417—62 **50 Claims**









1. In a positive displacement pump having two or more pumping cylinders wherein each said pumping cylinder has a piston slidably and sealingly mounted therewithin, each said piston being carried by a piston rod sealingly mounted for concentric reciprocation within said pumping cylinder the improvement comprising:

(a) each said piston carrying a unidirectional flowthru valve wherein each said valve allows fluid to pass therethrough said piston in one direction only of fluid movement, with said fluid movement being relative to said piston directional movement;

(b) said pumping cylinders interconnected fluidly to thereby form an enclosed chamber that is bounded dynamically in volume by each said piston wherein fluid passing through said flowthru valve of a first said piston will move into said chamber and whereby fluid exiting from said chamber must pass through said flowthru valve of the second said piston, and;

(c) reciprocation of either or both of said first or said second pistons causes pumping of fluid therethrough said first and said second pistons and therethrough said chamber.

4,541,780

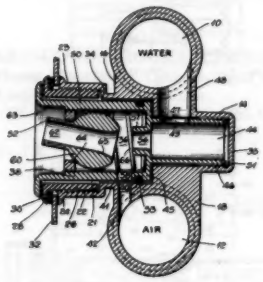
WATER JET AERATOR FOR GANGED OPERATION

Gerald W. Moreland, Garden Grove, Calif., assignor to Jebadabe International, Inc., Orange, Calif.

Filed Nov. 7, 1983, Ser. No. 549,663

Int. Cl.[4] A61H *33/02*

U.S. Cl. 417—176 **12 Claims**



1. A spa water jet aerator comprising:

an aerator body;

an water channel in said aerator body for guiding water flow;

an air channel in said aerator body for guiding air flow; and

a valve body movably coupled to said aerator body and having an aeration chamber in fluid communication with said air and water channels, said valve body simultaneously controlling the flow of both water and air through passages in fluid communication with said aeration chamber such that each said passage can be simultaneously partially open in at least one position of said valve body but the air passage can never be open when the water passage is open less than a sufficient amount to cause outflow from said aeration chamber into said spa.

4,541,781

PISTON PUMP HAVING INERTIAL ROLLERS MOUNTED FOR RADIAL MOVEMENT

Kenneth W. Sheffer, 817 East Ave., Baxter Springs, Kans. 66713

Filed Jan. 11, 1984, Ser. No. 570,023

Int. Cl.[4] F04B *19/00, 1/04*

U.S. Cl. 417—211 **9 Claims**

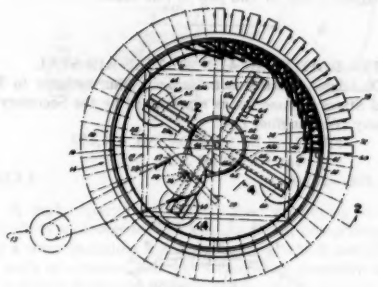
1. A piston pump utilizing orbiting means to operate the pistons, comprising:

rotary drive means including at least one roller rotatably carried on a rotatable frame for movement along an orbital path, and means to rotate the frame on a frame axis,

a plurality of pumps each having a cylinder, a reciprocating piston, an inlet for admitting a fluid into the cylinder and an outlet for exhausting fluid from the cylinder,

inlet conduit means for conveying a fluid from a fluid source to the inlets of the cylinders, and outlet conduit means for conveying fluid from the outlets of the cylinders,

a plurality of pivotable lever arms connected to drive the respective pistons in their cylinders, and means biasing the



lever arms away from the cylinders and into said orbital path for engagement of the lever arms by the roller as it moves along said orbital path,

a casing mounting the pumps and the lever arms adjacent said orbital path,

each roller being carried between sleeves slidably received on a pair of spaced parallel arms radiating from a hub on the frame axis for transverse movement of the roller with respect to said orbital path to thereby utilize the inertial force of the orbiting roller while engaging the lever arms to drive the lever arms.

4,541,782

PUMP SYSTEM

Frank Mohn, London, England, assignor to Framo Developments (UK) Limited, London

Filed Feb. 18, 1983, Ser. No. 468,087

Claims priority, application United Kingdom, Feb. 19, 1982, 8204942

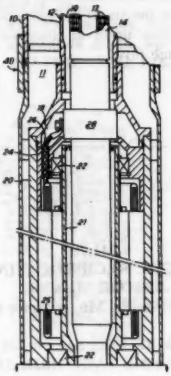
The portion of the term of this patent subsequent to Feb. 19, 2002, has been disclaimed.

Int. Cl.[4] F04B *35/04;* H02K *5/12*

U.S. Cl. 417—244 **17 Claims**

1. A submersible pump system comprising a pump stack including a plurality of pump units, spaced vertically apart, each pump unit having an electric motor, impeller means driven by said electric motor, and an inlet and an outlet for liquid being pumped, the outlet of a lower pump unit communicating with the inlet of a next adjacent upper pump unit whereby said pump units operate in series, pipe means extending between said pump units, tubular electrical conductor means having an internal surface and an external surface, said tubular electrical conductor means being located within said pipe means and being connected to the electric motors of said

pump units for supplying power to said motors, means including said internal surface and said external surface of said tubular electrical conductor means defining supply and return paths



for dielectric liquid providing insulation for said electrical conductor means, and means for circulating said dielectric liquid along said supply and return paths.

4,541,783

LONG STROKE, DOUBLE ACTING PUMP HAVING TENSION GUIDE MEMBER

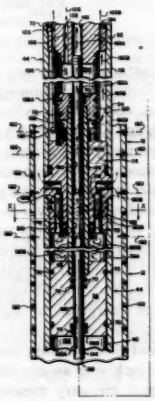
John B. Walling, P.O. Box 16266, Fort Worth, Tex. 76133

Continuation of Ser. No. 196,837, Oct. 14, 1980, Pat. No. 4,406,598, which is a continuation-in-part of Ser. No. 170,610, Jul. 21, 1980, Pat. No. 4,336,415. This application Jun. 30, 1983, Ser. No. 497,122

The portion of the term of this patent subsequent to Sep. 27, 2000, has been disclaimed.

Int. Cl.⁴ F04B *47/08*

U.S. Cl. 417—404 **15 Claims**



1. A pump for downhole installation in a wellbore for pumping production fluids from a well formation comprising:

an elongated pump housing having an axially extending cylindrical bore;

means forming spaced apart first and second opposed partition blocks at opposite ends of said bore;

an annular pump piston reciprocably disposed in and in substantial sealing engagement with said bore and dividing said bore into opposed pump chambers; and

an elongated tubular guide rod extending between said first and second partition blocks and axially through said bore, said guide rod being secured stationary in said bore and extending through said annular pump piston in guiding relationship to said annular pump piston, and said guide rod forming passage means for conducting production fluid from one of said chambers to a production fluid discharge conduit of said pump.

4,541,784

CENTRIFUGAL LUBRICATING OIL PUMP OF AN EXHAUST GAS TURBOCHARGER

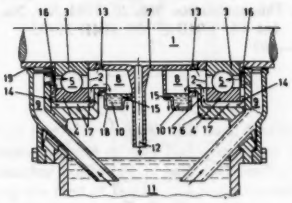
Hansulrich Hörler, Zurich, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Apr. 24, 1984, Ser. No. 603,319

Claims priority, application Switzerland, Apr. 29, 1983, 2310/83

Int. Cl.⁴ F04B *17/00*; F02C *7/06*

U.S. Cl. 417—407 **4 Claims**



1. In a centrifugal lubricating oil pump of an exhaust gas turbocharger having a casing and shaft bearing for supporting a turbocharger shaft, said lubricating oil pump comprising a pump rotor located on the turbocharger shaft which pump rotor is provided with air vent ducts, an oil suction pipe having a lower end which communicates with an oil sump and an upper end which communicates with a hollow annular chamber, which chamber receives a rotating annulus of oil during operation due to a centrifugal force effect, wherein the improvement comprises the pump rotor being provided with two laterally located hollow annular chambers and being fastened on the turbocharger shaft between two shaft bearings, the shaft bearings being each located between an oil suction pipe and a hollow annular chamber of the pump rotor, the oil being sucked from the oil sump through injection nozzles and through the shaft bearings.

4,541,785

SELF-PRIMING CENTRIFUGAL LUBRICATING OIL PUMP OF AN EXHAUST GAS TURBOCHARGER

Hansulrich Höarler, Zurich, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Apr. 24, 1984, Ser. No. 603,320

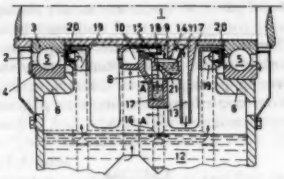
Claims priority, application Switzerland, Apr. 29, 1983, 2311/83

Int. Cl.⁴ F04B *17/00*; F02C *7/06*

U.S. Cl. 417—407 **3 Claims**

1. A self-priming centrifugal lubricating oil pump of an exhaust gas turbocharger, of the type having a pump rotor located on the turbocharger shaft and provided with air vent ducts and an oil suction pipe having a lower end which communicates with an oil sump and an upper end which communicates with a hollow annular chamber, which chamber receives a rotating annulus of oil during operation due to the centrifugal force effect, the improvement comprising the pump rotor being fastened on the turbocharger shaft between two shaft bearings, a stationary U-shaped oil ring channel being located

at a larger diameter outside the rotating annular chamber, said U-shaped oil ring channel being connected via an oil branch



passage to injection nozzles located at the side of the shaft bearings.

4,541,786

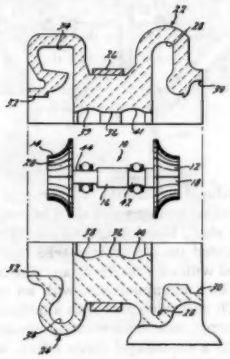
CERAMIC TURBOCHARGER

Arthur F. McLean, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 414,741, Sep. 3, 1982, abandoned. This application Sep. 20, 1984, Ser. No. 652,552

Int. Cl.[4] **F04B** *17/00;* **F04D** *29/02*

U.S. Cl. 417—407 **1 Claim**



1. An all ceramic lightweight, low inertia turbocharger assembly for use with an internal combustion engine having an air induction system for the intake flow of air at atmospheric pressure and an exhaust gas flow outlet, consisting of a one-piece ceramic rotor assembly rotatably mounted within a two-piece ceramic housing on ceramic ball bearing assemblies therebetween;

the rotor assembly consisting of a driveshaft with a radial flow type compressor rotor formed at one end and a radial flow type turbine rotor symmetrically formed at the opposite end;

the housing comprising two essentially axially symmetrical housing segments joined together to surround the rotor assembly with a radial clearance space therebetween, the housing segments having flow passages formed therein for the flow of atmospheric air through the compressor rotor into the engine air induction system and the flow of exhaust gases through the turbine rotor to drive the same;

the ball bearing assemblies consisting of a ceramic cylindrical ball bearing cage split along its axial length and having circumferentially spaced pockets each receiving a ceramic ball rotatably therein, the ends of the cage defined by the split being joined by a keyway-slot type connection, the driveshaft having an outer surface with a first cylindrical portion defining an inner ball race and a second axially spaced portion with an annular groove therein defining a second inner ball race, the inner surface of the radially adjacent portions of the housing being formed with complementary spaced annular grooves defining outer ball races receiving and retaining the balls therein, the grooves having a radius constructed to axially retain the balls therein, the all ceramic assembly providing low weight and resultant low inertia to the parts providing fast rotatable response time upon an increase in exhaust flow against the turbine flow.

4,541,787

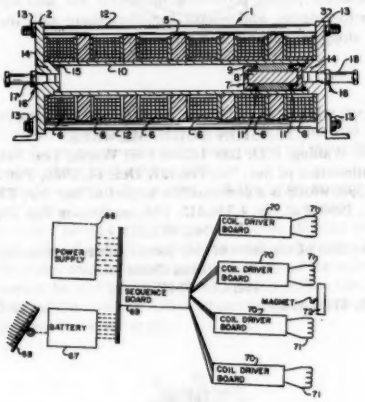
ELECTROMAGNETIC RECIPROCATING PUMP AND MOTOR MEANS

Sanford D. DeLong, Ellisville, Mo., assignor to Energy 76, Inc., Mattoor, Ill.

Filed Feb. 22, 1982, Ser. No. 351,272

Int. Cl.[4] **F04B** *17/04;* **H02K** *33/00*

U.S. Cl. 417—417 **16 Claims**



1. In an electromagnetic reciprocating means for use for providing mechanical force for functioning as a pump means for conveyance of fluid, comprising, cylinder means, closure means provided at each end of the cylinder means, at least one of said closure means incorporating at least one of a fluid inlet and fluid outlet valve means for accommodating pumped fluid flow through the cylinder means, at least a pair of electromagnets operatively associated with said cylinder means, a magnetically responsive piston provided within said cylinder means and capable of longitudinally shifting reciprocally within said cylinder means upon the sequential energization of said electromagnets, electrical circuitry means connecting with said electromagnets and upon energization charging said electromagnets in progressively timed sequence for enducing the reciprocal shifting of said piston within said cylinder means, said electrical circuitry including an electrical energy power supply means, sequencing circuitry means connecting with said power supply means and including a series of gates and being useful for regulating the rate and timing of the delivery of electrical charge to the electromagnets, and a coil driver circuitry means electrically connecting with each electromagnet and also connecting with the sequencing circuitry means and useful for regulating the quantity of charge delivered to each of the particular electromagnets during operation of the reciprocating means.

4,541,788
DIAPHRAGM FLUID PUMP

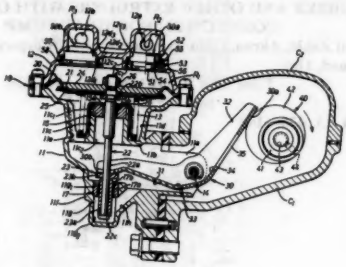
Yoshihisa Nomura; Shingo Watanabe, both of Toyota, and Shoichi Yamamoto, Oobu, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota and Aisan Kogyo Kabushiki Kaisha, Oobu, both of, Japan

Filed Apr. 13, 1984, Ser. No. 599,819

Claims priority, application Japan, Apr. 19, 1983, 58-068818

Int. Cl.[4] F04B *43/02*; F16J *1/10*

U.S. Cl. 417—471 **10 Claims**



1. A diaphragm fluid pump, comprising:

a housing assembly including a lower housing section for forming a lubricating oil chamber therein and an upper housing section coupled with said lower housing section and provided thereon with inlet and exhaust ports;

a diaphragm piston assembly including a diaphragm member clamped in a fluid-tight manner at the outer periphery thereof between said housing sections to form a pump chamber in said upper housing section, and an operation rod connected at the upper end thereof with the center of said diaphragm member;

valve means assembled within said upper housing section and including a first check valve to permit fluid flow into said pump chamber through said inlet port and a second check valve to permit fluid flow discharged from said pump chamber through said exhaust port; and

a rocker arm pivoted on a portion of said lower housing section and driven by a drive shaft to swing in a vertical direction, said rocker arm having a swingable end connected with said operation rod to reciprocate said diaphragm piston assembly in an axial direction;

said diaphragm fluid pump further comprising a pair of axially spaced upper and lower guide assemblies mounted within said lower housing section for slidably supporting said operation rod in its axial direction, and a support sleeve rotatably mounted on the lower end portion of said operation rod and slidably supported by said lower guide assembly, said support sleeve being formed with an annular flange for receiving thereon the swingable end of said rocker arm.

4,541,789
FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

Heinz Nothdurft, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

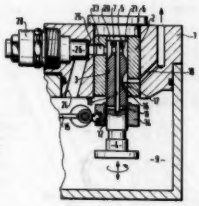
Filed Aug. 23, 1984, Ser. No. 644,123

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1983, 3334199

Int. Cl.[4] F02M *41/12*

U.S. Cl. 417—498 **2 Claims**

1. In a fuel injection pump for an internal combustion engine, comprising a housing; a cylindrical means disposed in said housing and having an interior; a distributor pump piston reciprocally axially and rotationally movable in said cylindrical means; said piston having an end face which encloses in the interior of said cylindrical means a pump operation chamber, said piston being formed with a relief passage extended from said end face inwardly of the piston, with a distributor opening communicating with said relief passage and opening at an outer surface of said piston, and with a plurality of elongated grooves forming on the outer surface of the piston control surfaces and opening into said pump operation chamber, said housing including a pump suction chamber, a fuel feeding passage communicating with said suction chamber, and said interior of said cylindrical means and a plurality of fuel conveying passages which extend through said housing and open into the interior of said cylindrical means, the number and the arrangement of said fuel conveying passages corresponding to the number and distribution of the cylinders of the internal combustion engine to be supplied with fuel, said pump operation chamber upon the axial and rotational movement of said piston during a fuel pump stroke being placed in communication through said relief passage and said distributor opening with a respective one of said fuel conveying passages and shut-off member positioned in said fuel feeding passage for interrupting the feed of fuel to the pump operation chamber and one of said elongated grooves being placed into communication with said fuel feeding passage during the fuel suction stroke of the pump piston, the number and the arrangement of said elongated grooves corresponding to the number and the arrangement of said fuel conveying passages, the improvement comprising a plurality of radial connecting passages formed in said piston such that each of said radial connecting passage connects one of said elongated grooves with said relief passage; and said fuel feeding passage having a single filling opening formed in said cylindrical means and being open at the interior of said cylindrical means.



4,541,790
VANE TYPE COMPRESSOR WITH DOUBLE-WALL VANES

Helmut Rembold, Stuttgart, and Manfred Ruoff, Möglingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 25, 1984, Ser. No. 573,564

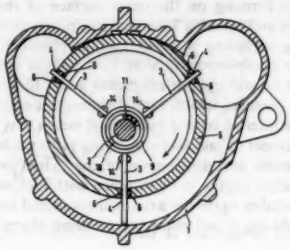
Claims priority, application Fed. Rep. of Germany, Apr. 29, 1983, 3315714

Int. Cl.[3] F04C *18/344*

U.S. Cl. 418—137 **11 Claims**

1. A vane type compressor including a shaft, a rotary piston surrounding said shaft, and a plurality of vanes radially extended from said shaft through said piston, said vanes each being formed of two opposite walls spaced from each other to form a hollow space therebetween and further including outer ring portions spaced from each other and inner bearing portions, said outer ring portions encircling said bearing portions, said bearing portions supporting said vanes on said shaft, said opposite walls and said ring portions being formed as one-piece, said hollow space extending to said bearing portions,

said vanes each further including a supporting structure inserted in said hollow space, said supporting structure being



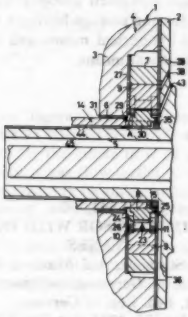
rigidly connected to said walls and being enclosed in said hollow space so that it is flush with outer edges of said walls.

4,541,791

VANED HYDRAULIC SYSTEM

Yasufumi Ideta, and Tadashi Fujikawa, both of Sagamihara, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 15, 1983, Ser. No. 561,669
Claims priority, application Japan, Mar. 9, 1983, 57-36742
Int. Cl.[4] F01C *17/00*
U.S. Cl. 418—182 **6 Claims**



1. A vaned hydraulic system comprising:

a housing comprising a first pump cover integrally formed with a fixed shaft projecting therefrom and a second pump cover having a longitudinal hole for receiving said fixed shaft to be inserted therein,

a cam ring pivotally received within said housing,

a rotor disposed for rotation radially inward of said cam ring and radially outward of said fixed shaft and arranged eccentrically with respect to said cam ring,

a plurality of vanes disposed radially slidably through said rotor,

a pair of vane rings disposed at the opposite sides of said rotor and radially inward of said vanes in abutting engagement against said vanes,

a driving shaft adapted to be inserted into said hole of said second pump cover for connection to said rotor, and

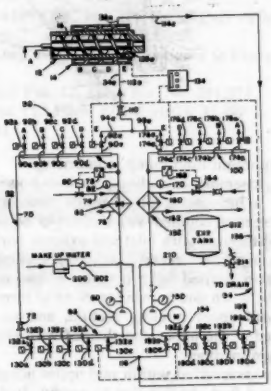
a centering member entirely disposed at a radially shifted position from said pair of vane rings so as to position the rotor in place before said driving shaft is inserted into said hole of said second pump cover.

4,541,792

DUAL LOOP TEMPERATURE CONTROL SYSTEM FOR RUBBER AND OTHER EXTRUDERS WITH OPTIONAL CONNECTION FOR HEAT PUMP

Paul Zakic, Akron, Ohio, assignor to NRM Corporation, Cleveland, Ohio

Filed May 9, 1983, Ser. No. 492,936
Int. Cl.[4] B29H *5/24*
U.S. Cl. 425—143 **21 Claims**



1. An extruder having a barrel through which extrudate is extruded,

said extruder including multiple zones,

a source of hot fluid,

a source of cold fluid,

means for connecting each zone to both said sources, and

means for selectively causing either hot fluid or cold fluid from said sources to flow through each of the zones thereby to control the temperature of the extrudate passing through each of said zones.

4,541,793

EXTRUDER NOZZLE AND A METHOD FOR PRODUCING PLASTIC PRODUCTS

Sven Lindqvist, Stenungsund, Sweden, assignor to Marie Iacconi, Switzerland

Filed Jun. 2, 1983, Ser. No. 500,541
Claims priority, application Sweden, Jun. 4, 1982, 8203463
Int. Cl.[4] B29F *3/06*
U.S. Cl. 425—206 **7 Claims**

1. An extruder nozzle for producing a thin-walled tubular product from a pressurized plastics substance extruded through a circular clearance opening formed by a rotating outer component and a counter-rotating inner component, and including a shaft for mounting said inner component,

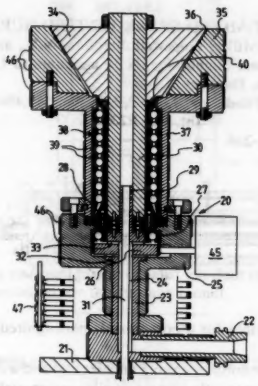
a tubular casing for mounting said outer component and enclosing said shaft with an annular axial allowance,

a bearing structure comprising a number of rolling bearings arranged axially behind each other within said annular allowance,

a fixed central column with a conduit for supplying said pressurized plastics substance to said nozzle and commu-

nicating with the end of said annular allowance remote from said clearance opening,

a connection passage between said clearance opening and the adjacent end of said annular allowance, whereby the plastics substance on its way to said clearance opening is forced to pass through at least some of said rolling bearings,



a housing rotatably journaled on said central column and forming an extension of the casing mounting said outer component, and

a power source mounted upon said housing and drivingly connected by gearing means enclosed in said housing for rotating said shaft and said casing together with said inner and outer components in opposite directions by means of planetary gears mounted on said central column.

4,541,794

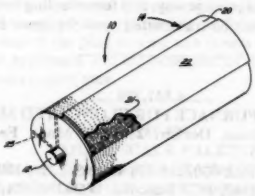
APPARATUS FOR PRODUCING PERFORATED PLASTIC FILM

Garland E. Raley, and Dean M. Spear, both of Terre Haute, Ind., assignors to Ethyl Corporation, Richmond, Va.

Filed Jun. 1, 1983, Ser. No. 499,857

Int. Cl.[4] B29C *17/04*

U.S. Cl. 425—290 **4 Claims**



1. An appratus for the manufacture of selectively apertured thermoplastic sheet or film, comprising a rotatable a predetermined pattern therein wherein as the film is contacted with the rotatable molding element means and a fluid pressure differential is applied to the surface of the film, a desired pattern of perforated areas and non-perforated areas is imparted to the film with each of said areas being continuous across the web of the film and alternating in the machine direction, said rotatable molding element means comprising a cylindrically shaped base pattern screen having a plurality of openings therein arranged in a predetermined pattern, an airflow restrictor means mounted over the outer surface of a portion of said base pattern screen for providing localized restriction of airflow through the screen whereby the pressure differential applied to the surface of the film is changed resulting in a continuously patterned, selectively apertured film of a desired repetitive pattern, said airflow restrictor means being a spunbonded-nonwoven breathable thermally resistant sheet material and an overlay screen mounted over said airflow restrictor means and secured on said base pattern screen.

4,541,795

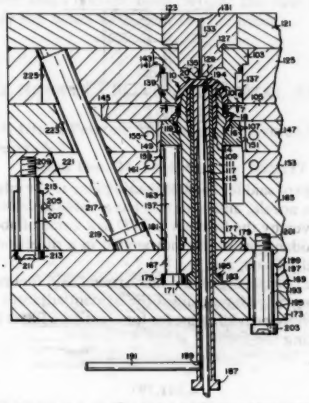
INJECTION MOLD FOR A BOTTLE CLOSURE DEVICE

Harold E. Cole, Magalia, Calif., assignor to James R. Goldberg, Navoto, Calif.

Filed Jul. 31, 1984, Ser. No. 636,151

Int. Cl.[4] B29C *1/00*; B29D *1/00*; B29F *1/14*

U.S. Cl. 425—437 **9 Claims**



1. A mold for forming a closure device having a cap portion, a cylindrical plug portion extending therefrom, and a cylindrical collar extending substantially coextensively and coaxially with the plug portion spaced therefrom to provide an annular cavity for receiving the open end of the container to be closed, said mold comprising, mold means enclosing a mold cavity defining the outer surface of the closure device, substantially cylindrical hollow outer core means extending into said mold cavity and defining the annular cavity in the closure device including the inner surface of the cylindrical collar and the outer surface of the plug portion, said mold means including a gripping portion for retaining the closure device when said outer core means are extracted from the annular cavity, said gripping portion of said mold means comprising means for forming a tear strip and tether section in the cylindrical collar of the closure device.

4,541,796

OXYGEN ASPIRATOR BURNER FOR FIRING A FURNACE

John E. Anderson, Katonah, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 428,013, Sep. 29, 1982, abandoned, which is a division of Ser. No. 138,759, Apr. 10, 1980, Pat. No. 4,378,205. This application Nov. 29, 1984, Ser. No. 675,477

Int. Cl.[4] F23C *7/00*

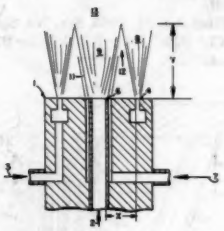
U.S. Cl. 431—187 **5 Claims**

1. Burner apparatus for firing a furnace intended for use with oxygen gas or oxygen-enriched air as the oxidant, comprising in combination:

(a) means for providing the major portion of the oxidant for combustion directly into the furnace, comprising at least one oxidant gas nozzle of diameter D for injecting a jet of oxidant gas into said furnace, said diameter D being less

than 0.75 inch, said nozzle(s) being connected by conduit means to a source of pure oxygen or oxygen-enriched air;

(b) means for providing a jet of fuel directly into the furnace, comprising a fuel nozzle, said oxidant and fuel nozzles terminating at their points of injection into the furnace in substantially the same plane, said plane being substantially perpendicular to the direction of at least one of said jets, said fuel nozzle being spaced from the oxidant nozzle most proximate to it by a distance X, where X is measured from



the edge of said fuel nozzle in said plane to the edge of said oxidant nozzle, and where X has a value at least equal to that given by the formula $X=4D$ to a value of about 20D, said oxidant gas nozzle not angled in a direction toward the fuel jet axis; and

(c) means comprising an annulus around said fuel nozzle for directing 5 to 10 percent of the oxidant adjacent said fuel jet, thereby providing means for creating a flame front and stabilizing the flame.

4,541,797

FUEL CONTROL SYSTEM HAVING AN ELECTRICAL IGNITION PROBE, PARTS THEREFOR AND METHODS OF MAKING THE SAME

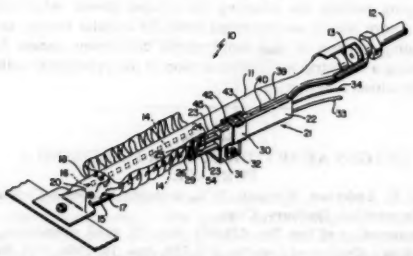
Fred Riehl, Greensburg, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 545,668, Oct. 26, 1983, Pat. No. 4,466,789, which is a continuation of Ser. No. 318,025, Nov. 4, 1981, abandoned. This application Jun. 6, 1984, Ser. No. 617,903

The portion of the term of this patent subsequent to Aug. 21, 2001, has been disclaimed.

Int. Cl.⁴ F23Q *3/00*

U.S. Cl. 431—264 **10 Claims**



1. In a method of making a fuel control system having a burner means provided with port means for issuing fuel therefrom, an electrical ignition probe means for igniting said issuing fuel by forming a spark gap with a ground electrode means and creating sparking thereacross, an electrically insulating means disposed adjacent said burner means and carrying said ignition probe means and said ground electrode means in a fixed relation relative to each other to define said spark gap therebetween whereby said ground electrode means is separate from said burner means, and a support bracket carrying said insulating means so that said spark gap is fixed relative to said burner means, the improvement comprising the step of clamping said ground electrode to said insulating means with a clamping means that secures said insulating means to said support bracket.

4,541,798

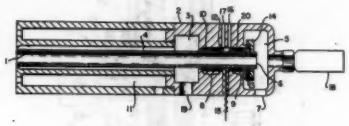
POST-MIXED SPARK-IGNITED BURNER

Raymond H. Miller, Hopewell Junction, N.Y., and Richard B. VanKempema, Highbridge, N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Nov. 7, 1983, Ser. No. 549,496

Int. Cl.⁴ F23Q *3/00*

U.S. Cl. 431—266 **6 Claims**



1. An assembly for a post-mixed spark-ignited burner comprising

(A) an inner conduit having an inlet end and a discharge end;

(B) a housing axially along and circumferentially around the inner conduit and spaced from the inner conduit so as to define an annular passageway between the inner conduit and the housing;

(C) a chamber within the housing in flow communication with the inlet end of the inner conduit;

(D) a supply conduit communicating with the chamber and separate from the inlet end of the inner conduit;

(E) spaced electrically non-conductive seals, each circumferentially around the inner conduit between the inlet end and the discharge end, each completely filling the annular space between the inner conduit and the housing in a radial direction; and

(F) means to provide electrical potential to the inner conduit between the seals;

whereby the inner conduit is securely fixed in position relative to, and electrically isolated from, the housing by the seals, fluid provided to the chamber through the supply conduit is constrained by the seals from mixing with fluid in the annular passageway, and forces acting on the supply conduit cannot be transmitted onto the inner conduit.

4,541,799

PREHEATING FURNACE FOR ELONGATED MATERIAL

Friedrich W. Elhaus, Dorfstr. 21, 7761 Moos, Fed. Rep. of Germany

PCT No. PCT/EP83/00022, § 371 Date Sep. 21, 1983, § 102(e) Date Sep. 21, 1983, PCT Pub. No. WO83/02661, PCT Pub. Date Aug. 4, 1983

PCT Filed Feb. 1, 1983, Ser. No. 548,861

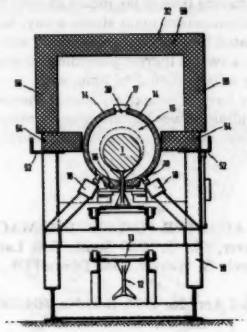
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1982, 3203433

Int. Cl.⁴ F27D *17/00, 1/00*

U.S. Cl. 432—177 **8 Claims**

1. In a preheating furnace for elongated material, like bars, ingots, billets, and the like of metal, particularly aluminum or aluminum alloys, having a furnace tunnel made of continuous or segmentally joined refractory furnace shells, particularly thin-walled furnace shells, and adapted to be heated by heater elements, like burners, hot gas nozzles, and the like which extend through the walls of the furnace shells and are directed toward the material introduced in longitudinal orientation in the furnace tunnel for direct heating of the same, and further

having an exhaust gas duct disposed in the upper range of the furnace, the improvement comprising that the furnace tunnel is



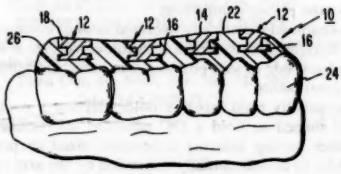
at least partly enclosed by the exhaust gas duct thereby providing a heat insulation for the furnace tunnel.

4,541,800

DENTAL APPLIANCE HAVING ENHANCED OCCLUSAL DURABILITY

Ira M. Bernstein, 14 Burlington Ave., Suffern, N.Y. 10901

Filed Dec. 28, 1983, Ser. No. 566,202
Int. Cl.⁴ A61C *3/00*
U.S. Cl. 433—6 **19 Claims**



1. A method of enhancing the occlusal durability of a dental appliance having an occlusal surface thereon comprising embedding in the appliance through an occulsal contact area a preformed wear resistant cylindrical dumbbell shaped occlusal plug, one end of the plug serving as a means for anchoring the plug in the appliance, and the other end of the plug serving as the occlusal contact area.

4,541,801

COLOR SCALE PALETTE

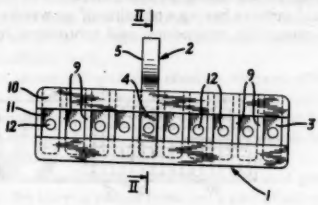
Wilhelm Mackert, Rodenbach, and Karlheinz Matthay, Oberursel, both of Fed. Rep. of Germany, assignors to Kulzer & Co. GmbH, Wehrheim, Fed. Rep. of Germany

Filed Apr. 13, 1984, Ser. No. 599,937
Claims priority, application Fed. Rep. of Germany, Oct. 12, 1983, 8329441
Int. Cl.⁴ A61C *19/10*
U.S. Cl. 433—26 **20 Claims**

1. A color scale palette, especially for selecting a dental material, comprising:

color rods each being tinted a different color all along its length and having a bore through one, stem end for color comparision therethrough; and

a frame for removably receiving the stem end of each color rod with the other ends of the rods projecting from the frame, the frame having guides, cover and back plates spacedly connected to each other by the guides between each pair of the color rods for, together, guiding the stem ends of the color rods into the frame with the other ends of the color rods projecting from the frame, and a stud



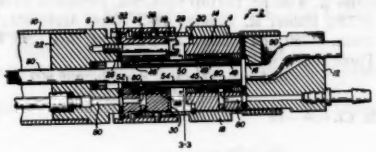
which snaps into the bore through the stem end of each color rod when so guided into the frame.

4,541,802

SWIVEL HOSE COUPLING FOR DENTAL HANDPIECE OR THE LIKE

Robert A. Olsen, Palatine, Ill., assignor to Sybron Corporation, Rochester, N.Y.

Filed Dec. 24, 1984, Ser. No. 686,117
Int. Cl.⁴ A61C *1/08*
U.S. Cl. 433—126 **2 Claims**



1. A swivel coupling for connecting a hose containing a plurality of fluid conduits and an optical fiber light conduit to a handpiece having corresponding conduits,

said coupling having a hose connector portion for connection to said hose and a handpiece connector portion for connection to said handpiece, said hose connector portion and said handpiece connector portion of said coupling being in sealed rotatable engagement with each other,

a swivel tube mounted to said handpiece connector portion and adapted for mating sealing engagement within said hose connector portion, said swivel tube including an outer cylindrical casing, an inner concentric cylindrical casing, and a spacer member separating said inner and outer casings and defining therewith a plurality of longitudinal passages,

said inner casing containing an optical fiber light guide in optical communication with the light conduit in said hose,

said plurality of passages in said swivel tube communicating with corresponding conduits in said hose connector portion and said handpiece connector portion,

whereby said swivel coupling provides for the transmission therethrough of drive air, secondary air, water and light with unlimited swivel capability and with maximum use of space within said swivel tube.

4,541,803

METHOD AND APPARATUS FOR MEDIATING INTER-JAW BITING PRESSURE

Harold A. Adler, 1457 Eastwind Cir., Westlake Village, Calif. 91361

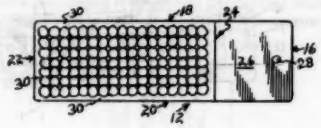
Filed Aug. 1, 1983, Ser. No. 519,413
Int. Cl.⁴ A61C *3/00*
U.S. Cl. 433—141 **9 Claims**

1. A dental crown seating wafer for mediating inter-jaw biting pressure, comprising:

wafer means for positioning between the teeth of opposing

arches, said wafer means generally defining a plane for the transfer of biting pressure between arches;

said wafer means having an upper and a lower surface, each of said surfaces having a plurality of outwardly extending non-rupturable protrusions, said protrusions forming respective upper and lower discontinuous resilient surfaces for resilient engagement by tooth areas impinging against said upper and lower discontinuous resilient surfaces, said resilient protrusions having sufficient structural strength to prevent their destruction under strong biting pressure from such impinging tooth areas.

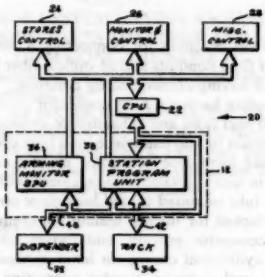


4,541,804

TRAINING INTERFACE DEVICE FOR DISPENSING STORES

Charles R. Armour, 10016B Spearfish, Ellsworth AFB, S. Dak. 57706; Robert R. Domke, 4982 Birch Acres Rd., Oscoda, Mich. 48750, and Richard J. Spero, PSC Box 2293, Pease Air Force Base, N.H. 03801

Filed Apr. 27, 1983, Ser. No. 488,901
Int. Cl.[4] G09B *9/08*
U.S. Cl. 434—15 **2 Claims**



1. A training interface device electrically connected between an ejector rack cable and a dispenser cable, said training interface device for use on an FB-111 aircraft during simulated nuclear bombing flights using conventional non-nuclear practice stores whereby cockpit indications and actions are similar to flights using conventional nuclear practice stores, said training interface device comprising:

a first relay for imitating the unlocking of a solenoid in a rack attached to a pylon of said aircraft, said first relay being activated by a station program unit in response to a computer output, said first relay having a first switch for connecting station program unit power to a dispenser for releasing stores, a second switch for connecting a weapon power line to said dispenser, and a third switch for connecting an unlocking monitor line to power, said switches closing in unison upon actuation of said first relay;

a second relay for imitating a sensing switch in said rack for indicating stores present and away indications in the cockpit, said second relay being actuated by power from said rack cable, said second relay having a first switch for disconnecting an identification line associated with stores present, and a second switch for interrupting power to an arming monitor station program unit, said switches acting in unison upon actuation of said second relay;

a third relay having time delay means therein for controlling indicator illumination upon stores away, said third relay being actuated by said first relay, upon activation of said third relay, a switch therein providing power on an output line during a fixed period of time; and

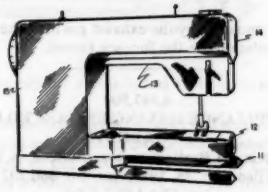
a fourth relay having time delay means therein, said fourth relay providing power to said second relay after a fixed period of time upon actuation of said fourth relay by said third relay.

4,541,805

AUDIO ADAPTER FOR SEWING MACHINE

Delbert J. Weaver, 623 E. 3735 South, Salt Lake City, Utah 84106, and Kevin D. Weaver, 3863 Dimrall Dr., Kearns, Utah 84118

Filed Apr. 26, 1984, Ser. No. 604,030
Int. Cl.[4] G09B *19/00*
U.S. Cl. 434—95 **9 Claims**



1. A combination electrically operated sewing machine and cassette tape player comprising:

a conventional electrically operated sewing machine having an upright post to which a cantilevered arm is attached, the back side of said post and arm being substantially free of protrusions;

a substantially rigid box-like holder having a pocket sized and shaped to hold a DC powered microcassette, said holder having external dimensions sized to permit the holder to be substantially concealed by the arm or post of said sewing machine when said holder is attached to the rear surface of said arm or post; and

an AC-DC converter contained within said holder, said converter having DC leads connectable to a microcassette tape recorder and AC leads connectable to the electrical on-off switch of said sewing machine.

4,541,806

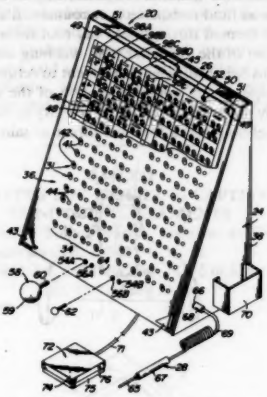
MULTIPLE APTITUDE TESTING DEVICE

Bonnie L. Zimmerman, Greenhill Farms; Thomas W. Gannaway, Overbrook Hills; Lawrence J. Resinski, Hatboro, and Philip S. DeVita, Richboro, all of Pa., assignors to Jewish Employment and Vocational Service, Philadelphia, Pa.

Filed Sep. 10, 1982, Ser. No. 416,439
Int. Cl.[4] G09B *7/06*
U.S. Cl. 434—258 **37 Claims**

1. An electronic testing device which utilizes a plurality of objectives test questions to evaluate an examine wherein said device comprises a housing, overlay means which is releasably secured to said housing, said overlay means containing indicia forming a plurality of questions and a plurality of possible answers corresponding to each of said questions, said overlay means further including coding means which communicates with corresponding means on said housing to specify a set of correct answers to said questions, selector means for enabling said examinee to select an answer for each of said questions, answer storage means for storing answers selected by the examinee, answer pattern memory means for storing the set of correct answers for particular test and comparison means for comparing said selected answers with said set of correct an-

swers following completion of said test and producing a signal which is transmitted to an indicator means, resulting in the indicator means producing a test score signal indicative of the



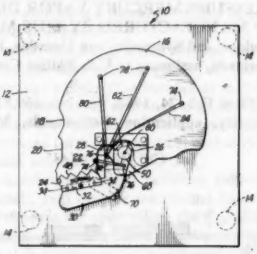
degree of correspondence between said correct set of answers and said selected answers, to evaluate the examinee's level of performance on said test.

4,541,807

DEVICE FOR DEMONSTRATING OCCLUSION AND THE EFFECTS THEREOF ON THE TEMPOROMANDIBULAR JOINT

Donald Rolfs, Wenatchee, Wash., assignor to Denar Corporation, Anaheim, Calif.

Filed Oct. 19, 1983, Ser. No. 543,290
Int. Cl.[4] G09B *23/32*
U.S. Cl. 434—264 **3 Claims**



1. A device for demonstrating occlusion which includes an upper member, portions of which simulate the maxilla and maxillary teeth located thereon and a fossa, a lower member, portions of which simulate a mandible, mandibular teeth located thereon and a condyle in a position relative to said fossa, said condyle being movable with respect to said fossa so as to permit said lower member to be moved relative to said upper member in a manner simulating normal jaw movement, such movement including rotating movement of said condyle about a hinge axis, said device including the improvement which comprises:

said condyle being smaller than said fossa so as to be capable of being moved into and out of a centric position of said hinge axis of said condyle with respect to said fossa,

a plurality of resilient members extending between said upper and lower members, said resilient members being connected to said upper and lower members so as to simulate muscles which normally support a mandible,

said resilient members tending to bias said condyle generally towards said fossa into a position within said fossa which depends upon the occlusion between said maxillary and said mandibular teeth,

cam means associated with said condyle for controlling the position of said condyle within said fossa, said cam means being capable of being actuated so as to vary the position condyle which said condyle assumes as the result of being biased by said resilient members,

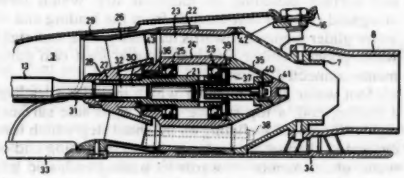
said cam means comprising a cam element located generally between the interior of said fossa and a part of the exterior of said condyle, said cam element being movable with respect to both said fossa and said condyle.

4,541,808

WATER JET PROPULSION SYSTEM

Hiromi Ono, Fujie Akashi, and Takemi Inoue, Kakogawa, both of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Dec. 18, 1981, Ser. No. 332,273
Claims priority, application Japan, Dec. 18, 1980, 55-179936
Int. Cl.[4] B63H *11/10*
U.S. Cl. 440—42 **1 Claim**



1. A water jet propulsion system for a watercraft comprising:

means defining a water flow path in the watercraft;

driving means including a prime mover situated in the watercraft and a driving shaft rotationally connected to said prime mover, said driving shaft extending into the water flow path and having first spline means at one end of the driving shaft located in the water flow path;

a duct assembly to be situated in the water flow path, said duct assembly including an impeller duct, a fixed blade duct having a plurality of fixed blades and a hub supported by said fixed blades in the center thereof, and a nozzle, said impeller duct, blade duct and nozzle being in turn located in the opposite direction relative to the stem of the watercraft and connected together;

a transmission shaft rotationally supported by and situated in the center of the hub, said transmission shaft having second spline means at one end to be engaged with the first spline means of the driving shaft; and

an impeller connected to said transmission shaft to be rotated in the duct assembly, said impeller, transmission shaft and duct assembly being firstly pre-assembled outside the watercraft and then the duct assembly including the transmission shaft and impeller therein being fixed in the water flow path so that the first and second spline means are connected together to thereby provide easy installation of the impeller in the watercraft.

4,541,809

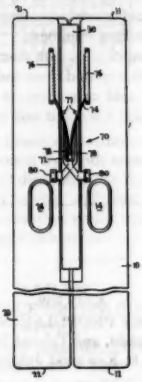
WATER GLIDER ASSEMBLY

Peter H. Schaumann, Apt. 1-D, 6940 Roswell Rd., Atlanta, Ga. 30328

Continuation-in-part of Ser. No. 321,474, Nov. 16, 1981, Pat. No. 4,459,118. This application Jul. 9, 1984, Ser. No. 628,906

Int. Cl.⁴ A63C *15/02*

U.S. Cl. 441—76 **14 Claims**



1. A water glider assembly comprising

a right foot water glider member which includes a leading end, a trailing end, a top surface and a left side surface; said left side surface including an indented step which forms an elongated channel that extends from the leading end of said water glider member towards its trailing end; said right foot water glider member also including at least two guide elements connected thereto,

a left foot water glider member which includes a leading end, a trailing end, a top surface and a right side surface; said right side surface including an indented step which forms an elongated channel that extends from the leading end of said water glider member towards its trailing end; said left foot water glider member also including at least two guide elements connected thereto,

an elongated stabilizer cartridge which is capable of extending along the elongated channels in both said right and left foot water glider members and is cooperable with the guide elements of both said right and left foot water glider members to prevent lateral and vertical separation thereof and to prevent individual sideways rotation of each glider member, yet allow easy parallel movement of the water glider members by the user when moving himself across the surface of the water in which the assembly is located; and

a releasable locking mechanism means for alternately locking the stabilizer cartridge to either the right or left water glider member and for releasing the stabilizer cartridge from the locked water glider member upon a forward movement of the other water glider member relative to the locked water glider member.

4,541,810

SWIMMING APPARATUS

Clarence E. Wenzel, 12 Gwynne Rd., Melville, N.Y. 11747

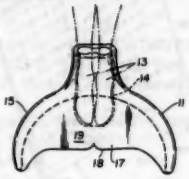
Filed Oct. 28, 1983, Ser. No. 546,659

Int. Cl.⁴ A63B *31/08*

U.S. Cl. 441—64 **11 Claims**

1. Swimming apparatus for increasing the propulsive thrust of a swimmer, said apparatus comprising

a member fully encompassed at the foot area of the swimmer, said member having a tail root, forked leg portions joined at said tail root, a webbing portion extending between said tail root and a trailing edge portion, said forked leg and webbing portions forming a hydrofoil, said tail root and forked leg portions consisting of material stiffer than said webbing portion, said webbing portion consisting of flexible material for permitting bowing and deformation as fluid resistance is encountered, a foot receiving pocket formed through said tail root for accommodating both feet of the swimmer, said webbing and trailing edge portions being sufficiently resilient to return to their original shape during pumping motion of the swimmer's feet thereby imparting a rearward velocity to fluid captured in said webbing and a forward thrust to said swimmer, and



said foot receiving pocket extending into said webbing portion,

said member further having a centerline and being formed in the general shape of a porpoise tail, said trailing edge having outer concave portions and inner convex portions symmetrically arranged with respect to the member centerline, dorsal type fins extending from said tail root to the webbing portion symmetrically arranged with respect to the member centerline, the fins being parallel and spaced apart at a width equal to the central convex portion width, said member further having a smooth and fluid construction for minimizing hydrofoil drag.

4,541,811

METHOD OF MANUFACTURING A LOW-PRESSURE MERCURY VAPOR DISCHARGE LAMP AND LOW-PRESSURE MERCURY VAPOR DISCHARGE LAMP MANUFACTURED BY THIS METHOD

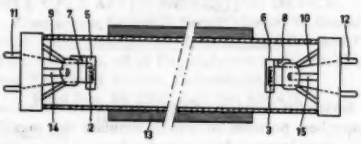
Berend J. Mulder, and Sybrandus van Heusden, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 24, 1983, Ser. No. 469,538

Claims priority, application Netherlands, Mar. 10, 1982, 8200973

Int. Cl.⁴ H01J *61/35*

U.S. Cl. 445—26 **4 Claims**



1. A method of manufacturing a low-pressure mercury vapor discharge lamp which comprises:

providing a tubular discharge envelope, having a glass wall which comprises a material selected from the group consisting of alkali and alkaline earth materials;

arranging two electrodes at the ends of said envelope for maintaining the discharge during the operation of the lamp;

providing a flow of rare gas in said envelope;

providing a negatively charged electrode on the outer wall surface of said envelope and heating the glass wall of said envelope while maintaining a direct current in the glass

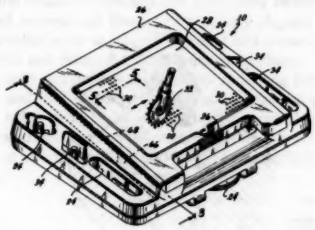
between said negatively charged electrode and an anode which is present inside the envelope disposed at least proximate to one of said two electrodes to form a thin continuous silicon-dioxide-containing layer at the inner surface of the discharge envelope which is substantially free from alkali and/or alkaline earth constituents, the conducting medium between said negatively charged electrode and said anode inside the envelope comprising a rare gas plasma, and removing oxygen ions from said envelope by said flow of rare gas, and lastly sealing said envelope.

4,541,812

ILLUMINATING TOY UTILIZING CAPTIVE LIGHT CONDUCTING ELEMENTS

Fuyuki Katsumata, Tokyo, Japan, assignor to Tomy Kogyo Company, Incorporated, Japan

Filed Jul. 25, 1983, Ser. No. 516,639
Int. Cl.⁴ A63H *33/04*
U.S. Cl. 446—91 **18 Claims**



1. A toy for displaying an illuminated pattern which comprises:

a housing;

a first panel located in said housing;

a second panel located in said housing and spaced away from said first panel at a fixed distance;

said first panel including a plurality of first openings formed through said first panel;

said second panel including a plurality of second openings formed through said second panel, the number of said second openings equal to the number of said first openings with each of said second openings aligned with one of said first openings and together each of said aligned first and second openings forming an optical pathway through said first and said second panels;

an opaque membrane located between said first and said second panels, said opaque membrane having a plurality of aperture means for controlling the transmission of light through said membrane, the number of said aperture means equal in number to the number of said first and said second openings with one of said plurality of said aperture means positioned in each of said optical pathways between the respective first and second openings forming said optical pathway, each of said aperture means capable of reversibly being opened and closed and when open allowing light to be transmitted through said membrane and when closed inhibiting the transmission of light through said membrane;

a plurality of light conducting members equal in number to the number of said first and said second openings, said light conducting members fixedly retained in said housing in a location between said first and said second panels, said number of said light conducting members equal in number to the number of said first and said second openings with one of said light conducting members positioned in each of said optical pathways between the respective first and second openings forming an optical pathway and positionable in said optical pathway between a first position wherein said light conducting member is located between said first panel and said opaque membrane and said aperture is closed and a second position wherein at least a portion of said light conducting member is positioned in said aperture means in said opaque membrane to open said aperture means;

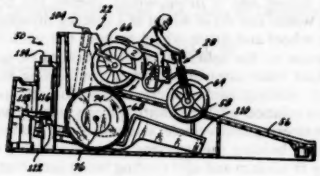
together said aperture means and light conducting member associated with each of said optical pathways allowing or inhibiting light transmission through said optical pathway, light being transmitted through said optical pathway when said light conducting member is in said second position to open said aperture means, light transmission through said optical pathway being inhibited when said light conducting member is in said first position and said aperture means is closed.

4,541,813

DEVICE FOR CONTROLLING WHEELED VEHICLES

Masaki Ikeda, Tokyo, Japan, assignor to Tomy Kogyo Company, Incorporated, Japan

Filed Jul. 20, 1983, Ser. No. 515,953
Claims priority, application Japan, Jul. 21, 1982, 57-111452
Int. Cl.⁴ A63H *29/00*
U.S. Cl. 446—429 **16 Claims**



1. A device for use in association with wheeled toy vehicles having front and rear wheels which comprises:

a support structure;

a vehicle support surface located on said support structure, said support surface including an opening, said opening sized and shaped so as to allow a front wheel of a wheeled toy vehicle to be at least partially located within said opening;

vehicle energizing means located on said support structure

said vehicle energizing means including a rotating wheel, a crank, and a clutch means;

said crank capable of being rotated by the operator of said toy, said clutch means operatively connecting said rotating wheel to said crank, said clutch means for transferring to said rotating wheel rotation of said crank in a first direction, and inhibiting transfer to said rotating wheel rotation of said crank in the opposite direction such that said rotating wheel is rotated in only one direction by said crank;

said rotating wheel and said opening in said support surface positioned on said support structure in association with one another whereby when said front wheel of said vehicle is located in said opening in said support surface, the rear wheel of said vehicle is positioned on and is supported by said rotating wheel so as to be rotated by said rotating wheel in response to rotation of said rotating wheel by said crank;

an element movably located on said support structure in association with said opening, said element movable toward and away from said opening;

release means located on said support structure in association with said element, said release means for moving said element toward said opening, said release means moving said element toward said opening such that said element contacts said front wheel located in said opening and displaces said front wheel from said opening as said element moves toward said opening.

4,541,814

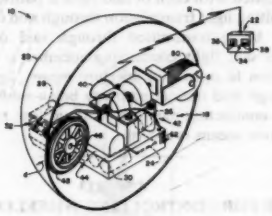
RADIO CONTROLLED VEHICLE WITHIN A SPHERE

John E. Martin, 5 Belfast Rd., Timonium, Md. 21093

Filed Dec. 23, 1983, Ser. No. 564,838

Int. Cl.[4] A63H *17/00*

U.S. Cl. 446—456 **1 Claim**



1. In a system of radio controlled, wheeled vehicle-within-sphere, said sphere having an inner surface substantially concentric with the outer surface thereof; the improvement comprising in combination: the vehicle having only two wheels: a steering wheel and a drive wheel, means for holding said steering wheel and drive wheel at a spacing providing for said steering wheel and drive wheel to hold the vehicle in rattle-free relation to the sphere at all orientations of said steering wheel; said radio control providing for turning said steering wheel in steering said vehicle; means for maintaining said rattle-free relation while permitting freely turning said steering wheel in steering said vehicle, said means for holding comprising a frame holding said steering wheel and drive wheel substantially in tandem and said spacing being such that said steering wheel and drive wheel are simultaneously in contact with said sphere inner surface at opposite ends of a diameter of said sphere, said means for maintaining comprising said turning being about an axis, said axis being substantially along said diameter, and said frame being substantially underslung relative to said steering wheel and said drive wheel.

4,541,815

TOY VEHICLE

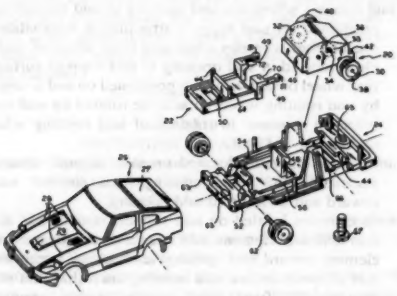
James S. W. Lee, c/o Laff, Whitesel, Conte & Saret, 401 N. Michigan Ave., Suite 2000, Chicago, Ill. 60611; Kwong-Wai Chow, Kowloon, Hong Kong; Alfred T. Y. Lau, and Ming-Ngar Chow, both of Hong Kong, Hong Kong, assignors to James S. W. Lee, Long Island, N.Y.

Continuation-in-part of Ser. No. 473,991, Mar. 10, 1983, Pat. No. 4,516,945. This application Jan. 9, 1984, Ser. No. 569,209

Claims priority, application United Kingdom, Jan. 11, 1983, 8300589; Dec. 9, 1983, 8332969

Int. Cl.[4] A63H *29/00*

U.S. Cl. 446—464 **9 Claims**



6. A toy wheeled vehicle comprising spring menas, transmission means with a reverse gear means responsive to rolling said vehicle backward for transmitting energy through said transmission for storing and locking energy in said spring, the invention being characterized by toggle-linkage means, spring tension caused by said energy stored in said spring urging said toggle-linkage to an operated position, means responsive to a manipulation of said toggle-linkage from said operated position for unlocking and releasing said energy stored in said spring by engaging said reverse gear, and means responsive to said release of said energy stored in said spring for propelling said vehicle in a forward direction.

4,541,816

SHAFT-COUPLING

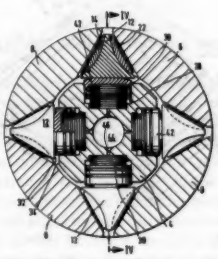
Kurt G. Fickelscher, Frankenthal, Fed. Rep. of Germany, assignor to Balcke-Duerr AG, Ratingen, Fed. Rep. of Germany

Filed Jan. 27, 1984, Ser. No. 574,579

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1983, 3304888

Int. Cl.[4] F16D *3/50*

U.S. Cl. 464—81 **8 Claims**



1. In a shaft-coupling formed of two halves each having at least two flat sloping surfaces running at right angles to a load-transfer direction; a sloping surface of one of said halves facing a sloping surface of the other half to form a pair; each such pair of facing flat sloping surfaces defining a gap therebetween in which a wedge is slidably mounted; each wedge having two flat sliding surfaces facing away from each other; said sliding surfaces of said wedges facing the sloping surfaces of said gaps in which said wedges are slidably mounted; and a pressure-element, mounted inside said shaft-coupling-forming halves radially inwardly of said wedges, upon which pressure elements said sliding wedges are supported, the improvement therein which comprises: spring-elements for radial spring-action on said sliding wedges, each spring-element being mounted between one of said sliding wedges and said pressure-element and said pressure-element being formed with radial chambers, each spring-element being received in one of said radial chambers.

4,541,817

DRIVE SHAFT ASSEMBLY

Masaki Sawabe, Okazaki, and Tadanobu Kumagai, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jun. 28, 1982, Ser. No. 392,605

Claims priority, application Japan, Oct. 6, 1981, 56-147726[U]

The portion of the term of this patent subsequent to Mar. 13, 2001, has been disclaimed.

Int. Cl.[4] F16D *3/20, 3/30;* **F16L** *23/00*

U.S. Cl. 464—111 **5 Claims**

1. A drive shaft assembly comprising:

(a) a first shaft;

(b) a casing surrounding said first shaft and having openings

at each axial end thereof, said casing receiving an end portion of said first shaft through the opening at one end thereof and being provided with a first flange on the periphery of the other end, said first flange having first planar annular end surface perpendicular to the axis of said first shaft;

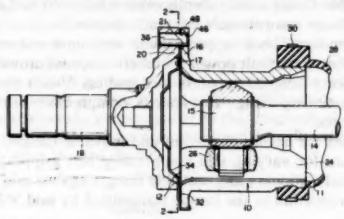
(c) a second shaft which is coaxial with said first shaft and which is provided with a second flange at one end thereof, said second flange having a second planar annular end surface perpendicular to the axis of said second shaft;

(d) an end cover having an annular planar periphery disposed between said first and second planar annular end surface, said end cover having two axial surfaces, one of which makes planar contact with said first planar annular end surface when the assembly is assembled and one of which makes planar contact with said second planar annular end surface when the assembly is assembled;

(e) a sealing member sealingly held between said end cover and said first flange inwardly of said annular periphery of said end cover and said first planar annular end surface on said first flange when the assembly is assembled;

(f) first means for quickly and accurately centering said first and second end flanges in precisely aligned coaxial relationship prior to joining said first and second flanges with bolts and nuts, said first means comprising:

(i) two and only two knock pin receiving holes in each of said first and second flanges, said knock pin receiving holes being located at a uniform radial distance from said first and second shafts defining a first circle located in said first and second annular end surfaces and outside



said sealing member, said two and only two knock pin receiving holes in said first flange being coaxial with said two and only two knock pin receiving holes in said second flange;

(ii) two and only two knock pin passing holes in said end cover, said two and only two knock pin passing holes being larger than said two and only two knock pin receiving holes in at least one of said first and second flanges and being coaxial with said knock pin receiving holes; and

(iii) two and only two knock pins, each of said two and only two knock pins having a chamfer at each end thereof and, when the assembly is assembled, being secured by press fitting in corresponding ones of said two and only two knock pin receiving holes in said first and second flanges, said knock pins extending in the axial direction defined by said first and second shafts, said knock pins being sized and shaped to be closely received in said knock pin receiving holes to thereby precisely position said first and second end flanges in precisely aligned coaxial relationship; and

(g) second means for joining said first and second flanges after they have been centered in precisely aligned coaxial relationship, said second means comprising:

(i) a plurality of corresponding bolt holes located in said first and second flanges and in said end cover on a second circle which is concentric to said first circle;

(ii) a plurality of bolts which, when the assembly is assembled, extend through said bolt holes, said bolts not being as closely received in said bolt holes as said knock pins are received in said knock pin holes in said first and second flanges; and

(iii) a plurality of nuts which, when the assembly is assembled, are threadedly received on said bolts,

whereby, during assembly of the drive shaft assembly:

(h) said first and secodd flanges and said end cover may be quickly and accurately centered in precisely aligned coaxial relationship by said two and only two knock pins, after which

(i) said first and second flanges may be joined by said plurality of bolts and corresponding nuts, which prevent axial dislocation of said first and second flanges, and

(j) after assembly of the drive shaft assembly, said two and only two knock pins and said plurality of bolts both transmit torque.

4,541,818

UNIVERSAL JOINT

Armin Olschewski; Zoltan Laszlofalvi, and Heinrich Kunkel, all of Schweinfurt, Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

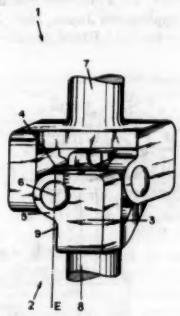
Continuation of Ser. No. 348,267, Feb. 12, 1982, abandoned.

This application May 17, 1984, Ser. No. 610,936

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1981, 3107373

Int. Cl.⁴ F16D *3/40*

U.S. Cl. 464—134 **12 Claims**



1. A universal joint comprising a spider, a drive yoke, and a driven yoke, said yokes being pivoted on said spider, each yoke having an axis of rotation, and two arms extending substantially in an axial direction, said arms having diametrically opposite bearing bores with closed cylindrical bore surfaces, the bearing bores of each yoke having an axis, the bearing bore axis of each yoke defining a separate plane with the rotation axis of the drive and driven yokes respectively, each of said yoke arms being joined to the respective yoke and being offset in a circumferential direction with respect to the respective plane formed by the axis of the respective bearing bore and the axis of rotation of the respective yoke, whereby deformation of the bores by stresses in the yoke arms is substantially eliminated.

4,541,819

UNIVERSAL JOINT EMPLOYING BEARING ROLLERS

Philip J. Mazziotti, Toledo, Ohio, assignor to The Zeller Corporation, Defiance, Ohio

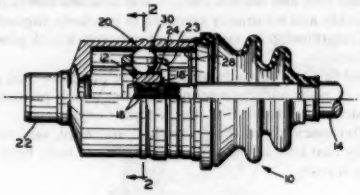
Filed Jul. 27, 1983, Ser. No. 517,757

Int. Cl.⁴ F16D *3/24*

U.S. Cl. 464—144 **15 Claims**

1. A universal joint comprising an inner race having grooves therein facing outwardly, an outer race having grooves therein facing inwardly, a cage between said inner and outer races having spaced openings therein, said openings including op-

posed linear edge portions having a longitudinal distance therebetween and a one-piece roller in each of said openings having a central cylindrical portion and two round ends, said round ends having equal radii with a common center, with the



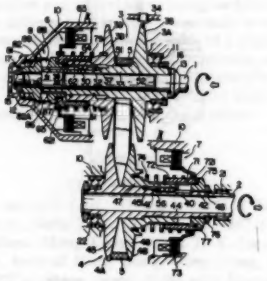
radius of said cylindrical portion being less than the radii of said round ends said longitudinal distance of said openings substantially equalling the diameter of said cylindrical portions.

4,541,820

V-BELT TYPE STEPLESS TRANSMISSION

Shiro Sakakibara, Anjo, Japan, assignor to Aisin-Warner Limited, Anjo, Japan

Filed Nov. 23, 1983, Ser. No. 554,732
Claims priority, application Japan, Nov. 27, 1982, 57-208146
Int. Cl.⁴ F16H *11/06*
U.S. Cl. 474—17 **1 Claim**



1. A V-belt type stepless transmission, comprising in combination:

an input pulley and an output pulley mounted on parallel input and output shafts, respectively, each pulley having a stationary flange and a movable flange axially displaceable relative to said stationary flange and rotatable integrally therewith;

an endless V-belt lapped around said input and output pulleys to transmit power therebetween;

a servo mechanism for said movable flange, including a drive member having a first screw or a second screw, the first screw formed on said movable flange or on a structure integrally connected to said movable flange, the second screw threadedly engaged with said first screw for axially displacing said movable flange by rotation of said second screw relative to said first screw, and a brake provided between said drive member and a transmission case for braking said drive member, and a torsion spring interposed between said movable flange and said drive member; and

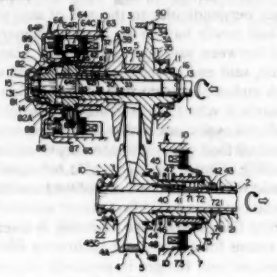
a cam mechanism carried on at least one of said input and output shafts to vary the belt gripping force of said stationary and movable flanges in proportion to the torque transmitted by said V-belt.

4,541,821

V-BELT TYPE STEPLESS TRANSMISSION

Shiro Sakakibara, Anjo, Japan, assignor to Aisin-Warner Limited, Anjo, Japan

Filed Nov. 23, 1983, Ser. No. 555,265
Claims priority, application Japan, Nov. 27, 1982, 57-208144; Nov. 27, 1982, 57-208147
Int. Cl.⁴ F16H *11/06*
U.S. Cl. 474—17 **8 Claims**



1. A V-belt type stepless transmission, comprising:

an input pulley and an output pulley mounted on parallel input and output shafts, respectively, each of said input and output pulleys having a stationary flange and a movable flange axially displaceable relative to said stationary flange and rotatable integrally therewith;

an endless V-belt lapped around said input and output pulleys to transmit power therebetween, said movable flange being adapted to press said endless V-belt against said stationary flange to create a compressive belt gripping force;

means for axially displacing said movable flanges; and

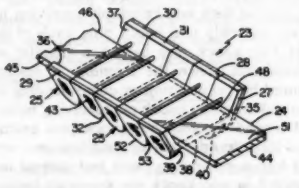
means for varying said compressive belt gripping force of said stationary and movable flanges against said V-belt in proportion to the torque transmitted by said V-belt.

4,541,822

BELT CONSTRUCTION, TRANSVERSE BELT ELEMENT THEREFOR AND METHOD OF MAKING THE SAME

Carl A. Stiles, Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio

Filed Dec. 19, 1983, Ser. No. 562,551
Int. Cl.⁴ F16G *1/00*
U.S. Cl. 474—201 **20 Claims**



1. In an endless power transmission belt construction comprising an endless flexible carrier means having an inside surface means and an outside surface means, and a plurality of transverse belt elements assembled on said carrier means, each said belt element having a recess therein defining an intermediate transverse shoulder means for engaging said inside surface means of said carrier means and a pair of inwardly facing shoulder means confining said carrier means therebetween, each inwardly facing shoulder means having an opening interrupting the same and being aligned with said opening in the

other inwardly facing shoulder means of its respective belt element, each said belt element having a pin provided with opposed ends respectively disposed in said openings of said inwardly facing shoulder means thereof whereby said carrier means is confined between said pin and said transverse shoulder means of each said belt element, the improvement wherein said pin of each said belt element has its said opposed ends snapfitted into said respective openings of said inwardly facing shoulder means thereof.

4,541,823

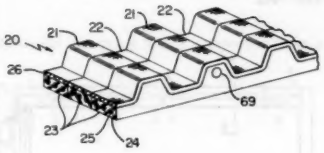
LONG SYNCHRONOUS BELT

Richard L. Marsh, and Robert E. Wetzel, both of Springfield, Mo., assignors to Dayco Corporation, Dayton, Ohio

Division of Ser. No. 34,698, Apr. 30, 1979, Pat. No. 4,448,621. This application Jan. 23, 1984, Ser. No. 583,554

Int. Cl.⁴ F16G *1/28*

U.S. Cl. 474—205 **9 Claims**



1. In an endless synchronous belt made primarily of elastomeric material which comprises a plurality of narrow, toothed strips joined in side-by-side fashion, the improvement in which said belt comprises a single continuous strip of elastomeric material wound concentrically in side by side fashion, in which all of each side of each portion of said strip contacts the whole side of each adjacent portion of said strip, and in which said teeth are approximately perpendicular to the longitudinal axis of said belt, said strip having at least one longitudinally extending reinforcement located therein.

4,541,824

APPARATUS FOR CHANGING THE DIRECTION OF MOVEMENT OF STREAMS OF PAPER SHEETS AND THE LIKE

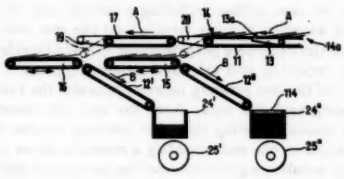
Hans Müller, Zofingen, Switzerland, assignor to Grapha-Holding AG, Hergiswil, Switzerland

Filed Jan. 10, 1984, Ser. No. 569,773

Claims priority, application Switzerland, Jan. 14, 1983, 194/83

Int. Cl.⁴ B31B *1/00*

U.S. Cl. 493—29 **6 Claims**



1. Apparatus for altering the direction of movement of a series of streams of paper sheets or the like, comprising a first transporting unit arranged to advance successive streams of said series in a first direction and including spaced-apart front and rear sections; a second transporting unit arranged to advance streams of sheets in a second direction substantially counter to said first direction; first and second direction reversing conveyors respectively located downstream of said rear and front sections, as considered in said first direction; a first switch disposed between said sections and movable between a first position in which a stream is free to advance thereover from said rear onto said front section and a second position in which a stream is free to advance thereover from said rear section onto said first conveyor; a second switch movable between a first position in which it prevents the movement of streams of sheets from said front section onto said second conveyor and a second position in which a stream is free to advance thereover from said front section onto said second conveyor; and reversible drive means for said conveyors, said drive means being arranged to drive said conveyors in said first direction in the second positions of said switches and to drive said conveyors in said second direction to thereby enable said conveyors to deliver streams of sheets to said second unit in the first positions of said switches.

4,541,825

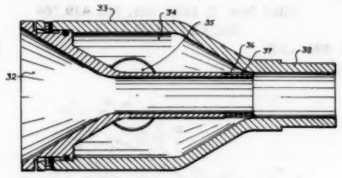
LOW AIR PRESSURE METHOD AND APPARATUS FOR FORMING FILTER RODS

Rebecca A. Hyde; Harold T. Bloom, both of Charlotte, and Thomas E. Morris, Concord, all of N.C., assignors to Celanese Corporation, New York, N.Y.

Filed Dec. 27, 1982, Ser. No. 453,006

Int. Cl.⁴ B31C *13/00*

U.S. Cl. 493—44 **4 Claims**



1. In an apparatus for the manufacture of continuous filament cigarette filter elements from previously opened and deregistered crimped continuous filament tow comprising mechanical filament forwarding means, an aspirating jet and compacting means adjacent thereto, said aspirating jet being equipped with means for dissipating aspirating fluid, the improvement comprising employing a low pressure aspirating jet comprising an inner trumpet shaped member positioned within an outer trumpet shape member, said inner and outer trumpet shaped members being fabricated such that when assembled a plenum chamber is provided which encircles substantially all of said inner trumpet shaped member, said outer trumpet shaped member being provided with a low pressure air entry and said inner trumpet shaped member having a stem portion, said stem portion being fluted at the exit portion thereof with longitudinally extending flute members said flute members being substantially parallel to said stem portion so as to produce a flow straightening zone whereby air entering said plenum chamber is caused to flow in a direction substantially axially of said continuous filament tow due to the fluid vectoring action of said flute members.

4,541,826

METHOD AND APPARATUS FOR MAKING COMPOSITE FILTER RODS

Brian H. Warner, High Wycombe, United Kingdom, assignor to Molins PLC, London, England

Filed Sep. 23, 1982, Ser. No. 421,834

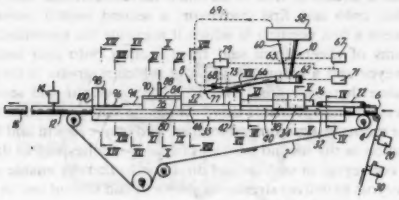
Claims priority, application United Kingdom, Sep. 25, 1981, 8129113

Int. Cl.⁴ A24C *5/50*

U.S. Cl. 493—48 **26 Claims**

1. A method of producing composite filter rod, comprising conveying a stream of spaced component filter portions in an

endwise direction, partially wrapping the portions in a continuous wrapper, and projecting particulate filter material with a certain velocity in a substantially continuous stream along a



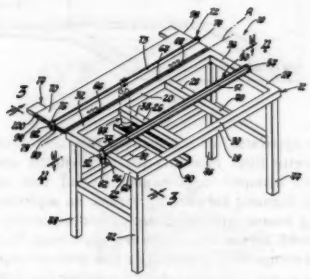
path which converges with that of said stream of filter portions, so that the spaces between said portions and partially enclosed by said wrapper receive particulate material directly from said path.

4,541,827

CARTON UNFOLDING APPARATUS

James D. O'Dea, Oxford, and Glen J. Venable, Fenton, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 8, 1982, Ser. No. 439,764
Int. Cl.⁴ B31B *1/78*
U.S. Cl. 493—309 **2 Claims**



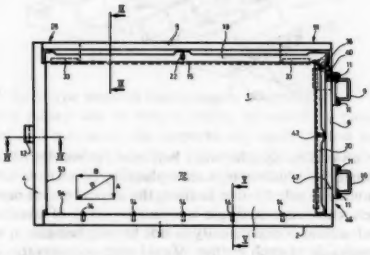
1. An apparatus adapted to support a carton having a plurality of hingedly interconnected panels in a flattened condition and to open said carton so as to cause said panels to form a box into which an article can be inserted, said apparatus comprising a generally rectangular base frame providing a flat support surface bounded by a pair of side edges interconnecting a front edge to a rear edge; a plate member pivotally connected to said rear edge of said base frame for movement between a first position wherein said plate member is horizontally aligned with said support surface of said base frame and a second position wherein said plate member is located in a substantially vertically oriented plane; a first stop member and a second stop member each supported for adjustable movement relative to said rear edge of said base frame and mounted respectively on said flat support surface of said base frame and on said plate member so as to permit cartons of varying widths to be positioned between said first and second stop members when said plate member is in said first position; each of said stop members comprising an elongated bar member rigidly connected at its opposite ends to a guide member which serves to maintain said bar member in surface contact with the associated flat surface; and a power-operated actuator pivotally connected between said plate member and said base frame for moving said plate member to said second position so as to cause said carton when in said flattened condition and located between said first and second stop members to be compressed therebetween and formed into said box.

4,541,828

TOOL SUPPORT WITH AN ARRANGEMENT FOR CENTERING AND FIXING A TOOL THEREIN

Georg Polic, Prilly, Switzerland, assignor to Bobst S.A., Lausanne, Switzerland

Filed Apr. 4, 1984, Ser. No. 596,660
Claims priority, application Switzerland, Apr. 22, 1983, 2171/83
Int. Cl.⁴ B31B *3/14, 1/25, 1/20*
U.S. Cl. 493—468 **4 Claims**



1. A tool support with an arrangement for centering and fixing a tool therein, said tool support having a rectangular frame formed by a pair of longitudinal side members connected to a pair of transverse side members; a pair of pressing members; first means mounting one of the pair of pressing members for movmeent on one of the side members of the frame; and second means mounting the other pressing member of the pair of pressing members for movement on a second side member adjacent the one side member, each of the pressing members being a bendable blade having a pressing surface curved along the length of the member with a profile matching a profile of a beam resting on two supports and bearing a uniformly distributed load, the one pressing member having an end with an inclined plane to form a cam surface, the other pressing member having an end provided with a roller engaging said cam surface, said first means mounting the one pressing member having the cam surface including a central axle on said one pressing member, a guide member on the one side member having a slot extending perpendicular to said one side member slidably receiving said axle, and a tightening means adjacent the end of the one pressing member opposite the cam surface for biasing said end away from the one side member, said second means mounting the other pressing member having a roller adjacent one end including a central axle on said other pressing member, a guide member on the second side member having a slot extending transverse to said second side member slidably receiving said axle, and a pair of tightening means biasing the other pressing member away from the second side member so that actuation of the tightening means adjacent the roller causes both pressing members to exert a diagonally directed force on a tool to urge it into a diagonal direction from the corner adjacent the roller and further actuation of the remaining tightening means urges both pressing members into full engagement with the tool in a centered position in the frame.

4,541,829

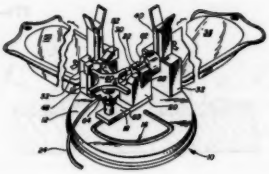
AUTOMATIC CONNECTION AND DISCONNECTION

John M. Munsch, Libertyville; Brant R. Danielsen, Round Lake Beach, and Jimmy L. Miller, Waukegan, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 416,785, Sep. 10, 1982, abandoned. This application Apr. 16, 1984, Ser. No. 600,858

Int. Cl.[4] **A61M** *51/14;* **A61J** *5/00*

U.S. Cl. 604—80 **25 Claims**



1. Apparatus for removing a first connector from a second connector and reconnecting the first connector with a third connector, which comprises:

first, second, and third retention means for respectively carrying first, second, and third connectors, each connector defining an axis; platform means for carrying said first, second, and third retention means; and means for operatively coupling said first retention means to said platform and permitting controlled movement thereof along a fixed path, said means thereby permitting controlled movement of said first retention means in a first, essentially radial direction from a first position adjacent the second retention means, said first direction being parallel to the axis of a second connector mounted in the second retention means, permitting disconnection at said first position between first and second connectors, said means also permitting controlled movement in a second, different, essentially raidal direction to a second position adjacent the third retention means, said second direction being parallel to the axis of a third connector mounted in the third retention means, permitting connection at second position between first and third connectors, when said first, second, and third connectors are respectively carried in the first, second, and third retention means.

4,541,830
DYE TRANSFER SHEETS FOR HEAT-SENSITIVE RECORDING

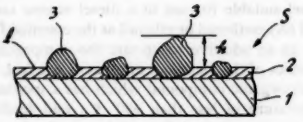
Shu Hotta, Hirakata; Tokihiko Shimizu, Takatsuki, and Nobuyoshi Taguchi, Ikoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Nov. 10, 1983, Ser. No. 550,623

Claims priority, application Japan, Nov. 11, 1982, 57-198715; Nov. 11, 1982, 57-198716; Dec. 1, 1982, 57-210767; Dec. 1, 1982, 57-210768; Jan. 18, 1983, 58-6310

Int. Cl.⁴ B41M *5/22*

U.S. Cl. 8—471 **12 Claims**



1. A dye transfer sheet for heat-sensitive recording comprising a substrate, and a thin layer of at least one sublimable dye formed on one side of the substrate, said thin layer containing non-sublimable particles uniformly distributed throughout the layer and projecting from the surface of the layer to form irregularities on the layer surface.

4,541,831
DUSTLESS, WATER-SOLUBLE, SOLID, DYESTUFF OR OPTICAL BRIGHTENER COMPOSITIONS AND A PROCESS OF PRODUCTION

Walter Günther, Grenzach-Wyhlen, and Kurt Hintermayr, Rheinfelden, both of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 52,538, Jun. 4, 1979, abandoned, which is a continuation of Ser. No. 856,899, Dec. 2, 1977, abandoned. This application Dec. 29, 1980, Ser. No. 221,166

Int. Cl.⁴ C09B *1/04, 1/10, 5/02;* **D06L** *3/12*

U.S. Cl. 8—648 **21 Claims**

1. A process for the production of a substantially dustless water-soluble dye or optical brightener composition, which process comprises mixing a dry, solid, alkali metal salt of an inorganic acid, heated to at least 50° C., with a mixture of at least one dry water-soluble dye or optical brightener, an organic adhesive having a softening or melting point in the range of 30° to 150° C. and selected from the group consisting of sorbitol, urea, hydrated dextrose, glucose, lactose, mannitol, mannose, and polyethylene glycol having a molecular weight of above 3000, a dust-binding agent which is a surface-active agent, and one or more further additives selected from the group consisting of a water-soluble organic polyhydroxy compound having a melting point above 100° C., a dispersing agent, and a solid acid, base or buffer for pH adjustment.

21. A process for dyeing, printing or optically brightening a textile material, comprising the step of applying to the textile material the dye or optical brightener composition produced by the process of claim 1.

4,541,832
PROCESS FOR PRODUCING HIGH PURITY SODIUM CHLORIDE FROM POTASSIUM MINERAL FLOTATION TAILINGS

Antonio Vitellaro, and Giovanni Sanfilippo, both of Palermo, Italy, assignors to Italkali Societa Italiana Sali Alcalini S.p.A., Palermo, Italy

Filed May 9, 1983, Ser. No. 492,679

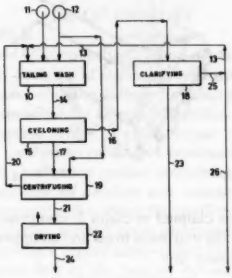
Claims priority, application Italy, May 11, 1982, 21187 A/82

Int. Cl.⁴ C01D *3/08, 3/14*

U.S. Cl. 23—303 **3 Claims**

1. A process for recovering sodium chloride of sufficiently high purity to make it suitable for industrial use from potassium mineral flotation tailings which consist essentially of sodium chloride, inert materials and potassium mineral, comprising:

(a) washing said mineral flotation tailings with a sufficient amount of both a first stream comprising water and a second stream comprising a mother liquor from one or more successive process steps to give a mixture of a solid phase and a liquid phase, the solid phase consisting essentially of sodium chloride and containing nearly all of the



sodium chloride contained in said mineral flotation tailings, said mother liquor comprising a solution containing undissolved sodium chloride;

(b) separating the mixture obtained in step (a) into a first turbid portion enriched in said solid phase, and a second turbid portion enriched in said liquid phase; and

(c) separating the solid phase from the liquid phase of said first turbid portion obtained in step (b) and recycling the resulting liquid phase to said second stream in step (a).

4,541,833
COAL COMPOSITION

Warren B. Mueller, 11814 Coursey Blvd., Suite 324, Baton Rouge, La. 70816

Filed Mar. 28, 1984, Ser. No. 594,293

Int. Cl.⁴ C10L *5/10*

U.S. Cl. 44—16 R **9 Claims**

1. A coal composition comprising:

a. coal;

b. Na_2SiO_3 from an aqueous SiO_2/Na_2O solution;

c. a water soluable surfactant; and

d. an organic ester having the formula,

wherein, R_1 is C_nH_{2n+2} or C_nH_{2n}, R_2 is C_nH_{2n+2} or C_nH_{2n}, and n=1–6.

4,541,834
PEAT EXTRUSION APPARATUS

Michael Finan, Ballintubber, Ireland, assignor to Ballintubber Enterprises Limited, Ireland

Filed Oct. 31, 1983, Ser. No. 547,541

Claims priority, application Ireland, Nov. 2, 1982, 2615/82

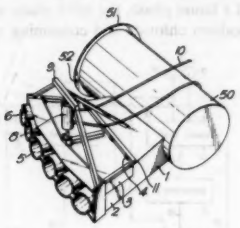
Int. Cl.⁴ E21C *49/00;* **B29F** *3/04*

U.S. Cl. 44—30 **10 Claims**

1. An outlet for a peat extrusion press comprising a pair of jaws which in the closed position thereof cooperate to define at least one peat extrusion pipe and which in the open position thereof define an unrestricted opening and jaw operating means for opening and closing the jaws during operation of the peat extrusion press, enabling the pipe or any pipe which has been clogged to be cleared by opening the jaws, whereby

clogging material is removed by pressure of peat being pushed from the press.

2. An outlet as claimed in claim 1 in which the two jaws are pivotally connected to one another for relative pivotal movement between the closed and open positions.



3. An outlet as claimed in claim 2, comprising a lower jaw fixed relative to the extrusion press and an upper jaw moveable relative to the lower jaw.

4,541,835

FUELS

John H. R. Norton, Bromley, England; Peter R. Rebello, Edenvale, South Africa; Clifford M. Kavonic, Bedfordview, South Africa, and Anthony J. Stiff, Edenvale, South Africa, assignors to AECI Limited, Johannesburg, South Africa

Continuation-in-part of Ser. No. 207,616, Nov. 17, 1980,. This application Feb. 26, 1982, Ser. No. 352,880

Claims priority, application South Africa, Dec. 11, 1979, 79/6717; Aug. 28, 1980, 80/5348; Sep. 25, 1980, 80/5954

The portion of the term of this patent subsequent to Sep. 17, 2002, has been disclaimed.

Int. Cl.⁴ C10L *1/18, 1/22*

U.S. Cl. 44—53 **8 Claims**

1. A fuel for a compression ignition engine and consisting esentially of a mixture of (A) at least one alcohol selected from the group consisting of methanol and ethanol as the essential fuel component, and (B) from 0.1% to 10% by volume, calculated on the alcohol, of at least one further organic compound or mixture of compounds which together have a spontaneous ignition temperature of less than 450° C., said further organic compound being selected from poly -1,2-alkylene monoalkyl ether mononitrates containing two or more ether linkages, and poly -1,2-alkyleneglycol dinitrates containing one or more ether linkages.

4,541,836

FUEL COMPOSITIONS

Edmond J. Derderian, Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 9, 1982, Ser. No. 448,280

Int. Cl.⁴ C10L *1/18*

U.S. Cl. 44—53 **9 Claims**

1. A phase-stable aqueous gasoline-ethanol fuel composition consisting essentially of gasoline, water ethanol and isobutanol, wherein the amount of water and ethanol present in said composition is equivalent to said composition containing a hydrous ethanol having a proof or from about 188 to about 199 in an amount ranging from about 1 to about 12 weight percent and wherein the amount of iso-butanol present in said composition ranges from about 2 to about 4 weight percent, the remainder of said composition consisting essentially of said gasoline, said composition further having a cloud point of about −8° C. or below and a (R+M)/2 octane rating above both that of the gasoline employed as well as above that of a non-aqueous mixture of said gasoline and an amount of ethanol equal to the amount of ethanol present in said composition.

4,541,837

FUELS

John H. R. Norton, Johnannesburg; Peter R. Rebello, Edenvale; Clifford M. Kavonic, Bedfordview, and Anthony J. Stiff, Edenvale, all of South Africa, assignors to AECI Limited, Johannesburg, South Africa

Filed Nov. 17, 1980, Ser. No. 207,616

Claims priority, application South Africa, Dec. 11, 1979, 79/6717; Aug. 28, 1980, 80/5348; Sep. 25, 1980, 80/5954

The portion of the term of this patent subsequent to Sep. 17, 2002, has been disclaimed.

Int. Cl.⁴ C10L *1/18, 1/22*

U.S. Cl. 44—53 **2 Claims**

1. A fuel suitable for use in a diesel engine comprising a mixture of (A) methanol or ethanol as the essential fuel component and, as an additive to up-rate the compression-ignition characteristics of the methanol or ethanol as a fuel, (B) at least one further organic compound which has a spontaneous ignition temperature of less than 450° C., said further organic compound being selected from 2'-butoxy-2-ethoxy ethyl nitrate; diethylene glycol dinitrate; triethylene glycol dinitrate, and the dinitrate of polyethylene glycol of an average molecular weight of 400.

4,541,838

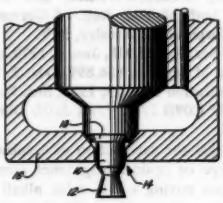
FUEL COMPOSITIONS

Edward F. Zaweski, and Leonard M. Niebylski, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Dec. 24, 1984, Ser. No. 686,084

Int. Cl.⁴ C10L *1/28*

U.S. Cl. 44—57 **29 Claims**



1. Distillate fuel for indirect injection compression ignition engines containing at least the combination of (i) organic nitrate ignition accelerator, and (ii) an alkoxysilane, said combination being present in an amount sufficient to minimize the coking characteristics of such fuel, especially throttling nozzle coking in the prechamber or swirl chambers of indirect injection compression ignition engines operated on such fuel.

4,541,839

ESTER-CONTAINING HALOPOLYALKYLENES

Michael I. Naiman, St. Louis, and John A. Schield, Chesterfield, both of Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Continuation-in-part of Ser. No. 432,494, Oct. 4, 1982, which is a continuation-in-part of Ser. No. 356,994, Mar. 11, 1982, Pat. No. 4,471,098. This application Jul. 2, 1984, Ser. No. 626,830

Int. Cl.⁴ C10L *1/22*

U.S. Cl. 44—62 **8 Claims**

1. A fuel oil containing a linear halogenated polyalkylene wherein said polyalkylene is characterized as:

(a) being essentially free of crosslinking;

(b) having vinyl unsaturation in the polyalkylene backbone; and

(c) having at least about 1 percent of the halogen groups replaced by ester groups having from 1 to 29 carbon atoms.

4,541,840

PROCESS AND DEVICE FOR THE DISCHARGE OF ASH-CONTAINING FUEL RESIDUES

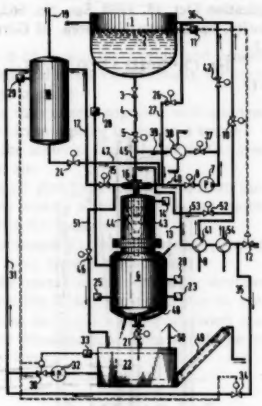
Josef Hibbel; Ulrich Gerhardus; Volkmar Schmidt, all of Oberhausen; Bernhard Lieder, Bottrop; Heinrich Scheve, and Erwin Zerres, both of Oberhausen, all of Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Filed Aug. 8, 1983, Ser. No. 521,468

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1982, 3230088

Int. Cl.[4] C10J *3/00*

U.S. Cl. 48—63 12 Claims



1. In a process for periodically discharging slag containing residue occuring during gasification of ash-containing solid fuels with oxygen and/or an oxygen containing gasification agent at a pressure of 10–200 bar wherein said residue is collected in a water bath (2), passed to a lock vessel (6) which is continually filled with water from a water supply container (18) with which it is in fluid communication and following gasification and pressure reduction to 0.05 to 4 bar pressure the residue is flushed out of said lock vessel (6) by water from said water supply container (18) into a downstream collecting vessel (22), comprising passing said residue in admixture with water from said water bath initially to a separating chamber (43) disposed upstream of said lock vessel (6), said separating chamber being in fluid communication with said water bath and said lock vessel, separating said slag from said water in said separating chamber (43) and returning water separated in said separating chamber (43) to said water bath, passing said slag from said separating chamber to said lock vessel, said lock vessel (6) being connected to said water supply container (18) via said separating chamber (43) and after said lock vessel is fed with slag but before its contents are flushed into said downstream collecting vessel (22) replacing water at an elevated temperature in said separating chamber with water at a lower temperature.

4,541,841

METHOD FOR CONVERTING CARBON-CONTAINING RAW MATERIAL INTO A COMBUSTIBLE PRODUCT GAS

Dieter Reinhardt, Erlangen, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mühlheim, Fed. Rep. of Germany

Filed Jun. 15, 1983, Ser. No. 504,132

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1982, 3222653

Int. Cl.[4] C10J *3/46*

U.S. Cl. 48—197 R 9 Claims

1. In a method for converting carbon-containing raw material, particularly coal, wood and crude oil, by passing a catalyst in steam in contact with the carbon-containing raw material in a first zone maintained by externally applied heat to effect a gasification reaction which is endothermic overall and promoted by said catalyst to produce a combustible product gas together with a gasification residue containing principally ash, and a minor amount of catalyst and unreacted carbon, the combination therewith of moving the gasification residue to a separate, exothermic second zone maintained as a separate fluidized bed having a higher temperature than said first zone, and passing steam free of the catalyst upward and in contact with the separated gasification residue as said fluidized bed while maintaining a temperature and a pressure in the second zone at which a homogeneous gaseous solution of the catalyst in the steam forms to extract the catalyst from the residue, and feeding said homogeneous gaseous solution from the gasification residue as the catalyst-steam mixture passing in contact with the carbon-containing raw material in the first zone.

4,541,842

GLASS BONDED ABRASIVE AGGLOMERATES

David Rostoker, Sturbridge, Mass., assignor to Norton Company, Worcester, Mass.

Continuation-in-part of Ser. No. 347,603, Feb. 10, 1982, abandoned, which is a continuation-in-part of Ser. No. 220,641, Dec. 29, 1980, abandoned. This application Jul. 11, 1983, Ser. No. 512,515

Int. Cl.[4] B24D *3/00*

U.S. Cl. 51—296 20 Claims

1. Abrasive agglomerate particles comprising a matrix of multi-cellular foamed glass and abrasive grit particles encapsulated within the cell walls of said glass.

4,541,843

PROCESS FOR PRODUCING GRINDING ELEMENTS

Karl Elbel, Pforzheim, and Rainer Augustin, Birkenfeld, both of Fed. Rep. of Germany, assignors to SEA Schleifmittel Entwicklung Anwendung GmbH, Pforzheim, Fed. Rep. of Germany

Filed Jan. 20, 1984, Ser. No. 572,544

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1983, 3301925

Int. Cl.[4] C09K *3/14*

U.S. Cl. 51—298 16 Claims

1. In a process for producing grinding elements in a casting mold including placing a mixture of abrasive grains, a cold hardening synthetic resin binder, and other additives into a

casting mold, and hardening the synthetic resin to form the grinding element; the improvement wherein: said abrasive grains and other additives have minimum particle sizes, particle size distributions and relative proportions essentially corresponding to the respective Fuller curve, thereby providing a non-compactable thixotropic mixture having the tightest possible packing of abrasive grains and other additives; said synthetic resin used as said binder consists of one or more polymerizable liquids and has a dynamic viscosity of less than 10 mPa.s; a radical forming starter system for said resin is added, in a known manner, to said mixture, and said thixotropic mixture is liquified by vibration prior to hardening.

4,541,844

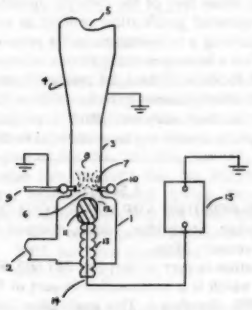
METHOD AND APPARATUS FOR DIELECTROPHORETICALLY ENHANCED PARTICLE COLLECTION

David H. Malcolm, 18 Deer Run Dr., Randolph, N.J. 07869

Filed Apr. 30, 1984, Ser. No. 605,399

Int. Cl.[4] B03C *3/16*

U.S. Cl. 55—10 **15 Claims**



1. In the dielectrophoretically enhanced separation of small sized particles from a moving stream of gas, the steps of

introducing a spray of discrete liquid droplets of 60 microns or less in diameter and having an electrical charge thereon greater than 10^{-3} coulombs per kilogram but not greater than 25 percent of the Rayleigh limit thereon, into said moving gas stream,

selectively directing the locus of introduction of said spray of liquid droplets in a path relative to the path of advance of said gas stream to maximize geometric interdiction of said charged droplets and the entrained particles in said gas stream,

and regulating the volume of liquid so introduced to be in the order of about one ten thousandth that of the volume of gas being treated per unit time to minimize space charge degradation of the collecting environment with attendant minimization of dielectrophoretic attraction forces therewithin.

6. Apparatus for effecting dielectrophoretically enhanced separation of small sized particulates from a moving gas stream comprising

conduit means for confining said moving gas stream bearing said particles,

means for introducing a spray of selectively sized and charged liquid droplets into said gas stream in a path relative to the advance of said gas stream to maximize geometric interdiction of said charged droplets and the entrained particles in said gas stream,

means associated with said spray introduction means for limiting the size of said introduced liquid droplets to 60 microns or less in diameter,

means for applying an electrical charge of greater than 10^{-3} coulombs per kilogram to said emitted spray droplets, such charge not being greater than 25 percent of the Rayleigh limit therefore,

said means for regulating the volume of liquid so introduced in droplet form to be in the order of about one ten thousandth that of the volume of gas being treated per unit time to minimize space charge degradation of the collecting environment with attendant minimization of dielectrophoretic attraction forces therewithin.

4,541,845

PROCESS AND APPARATUS FOR SEPARATING SOLID AND/OR LIQUID PARTICLES FROM GASES OR LIQUIDS

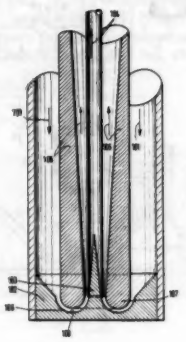
Herwig Michel-Kim, Bamberger Strasse 41, D-1000 Berlin 30, Fed. Rep. of Germany

Continuation of Ser. No. 462,605, Jan. 31, 1983, abandoned. This application Oct. 18, 1984, Ser. No. 662,527

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1982, 3203842

Int. Cl.[4] B01D *57/00, 59/18*

U.S. Cl. 55—17 **19 Claims**



1. A process for the separation of solid and/or liquid particles from gases or solids from liquids, as well as for the separation of gases or liquids of different densities, using a Venturi tube, characterized in that the gas and/or liquid is supplied axially into said venturi tube and flows radially symmetrically from the outside to the inside through a slot in an annular nozzle at flow velocities which can extend up to sound velocity, and in the slot with a radius of curvature of approximately 1 to 100 mm is subject to high centrifugal acceleration.

3. An apparatus for performing the process for the separation of solid and/or liquid particles from gases or solids from liquids, as well as for the separation of gases or liquids of different densities, using a Venturi tube comprising:

an inlet for fluid flow;

an annular nozzle disposed at the end of the inlet;

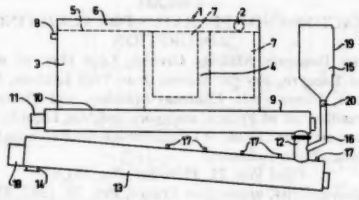
a bottom wall;

the nozzle formed in said bottom wall having a slot with a radius of curvature of approximately 1 to 100 mm through which fluid flows from the outside through the inlet and through the slot at flow velocities which extend up to sound velocity and are subject to the action of a high centrifugal acceleration, the slot being formed with a deflection angle of $>90°$ such that it is arranged about the central axis of the nozzle both at the start and finish of fluid flow deflection and in the direction of the fluid flow, the diameter of the slot decreasing outwardly from the central axis of the nozzle.

4,541,846
METHOD OF RECOVERING ENVIRONMENT-DETRIMENTAL MATERIAL

Carl A. Sjödin, Sollentuna, Sweden, assignor to Armerad Betong Vagforbattringar Aktiebolag, Solna, Sweden

Filed Nov. 4, 1983, Ser. No. 548,639
Claims priority, application Sweden, Nov. 11, 1982, 8206419
Int. Cl.⁴ B01D *46/00*
U.S. Cl. 55—97 **9 Claims**



1. A method of in situ recovering and rendering harmless material detrimental to the environment, for example asbestos, comprising the steps of:

transporting the material together with ambient air by use of a vacuum from a place in situ to a space;

separating the material from the air in the space;

filtering the air;

discharging air that has been filtered from the space;

continuously adding a substance to the material to permanently bind the material;

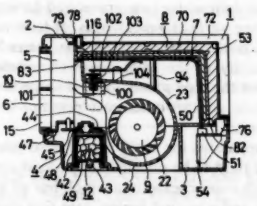
providing conveying structure that is operable to direct the material away from the space; and

continuously operating the conveying structure so that material with the added substance can be continuously directed from the space and accumulated externally of the space into manageable units in which the material is permanently bound.

4,541,847
AIR-PURIFYING APPARATUS

Naoyuki Oie; Hiromichi Koyama, both of Kasai, and Takafumi Takegawa, Himeji, all of Japan, assignors to Sanyo Electric Co., Ltd., Japan

Filed Jul. 26, 1984, Ser. No. 634,794
Claims priority, application Japan, Jul. 26, 1983, 58-137297
Int. Cl.⁴ B03C *3/12, 3/40, 3/82*
U.S. Cl. 55—124 **11 Claims**

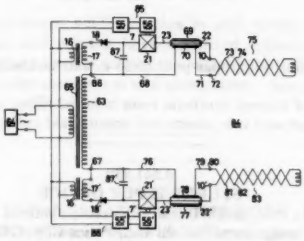


1. An air-purifying apparatus comprising: a main body having an intake portion and an outlet portion; a blowing means disposed in said main body and adapted to induce the ambient air through said intake portion and to forward the air to said outlet portion; and a high-voltage generating means mounted in said main body; wherein said intake portion includes a intake grille, first and second net-shaped electrode plates disposed along the inner side of said intake grille and opposing each other with a large potential difference developed therebetween by said high-voltage generating means, said first net-shaped electrode plate being remoter from said intake grille than said second net-shaped electrode plate, and an air-permeable filter made of a dielectric material disposed between said first and second electrode plates, and wherein at least said intake grille and said second net-shaped electrode plate being detachable from said main body.

4,541,848
PULSE POWER SUPPLY FOR GENERATING EXTREMELY SHORT PULSE HIGH VOLTAGES

Senichi Masuda, No. 605, Nishigahara 1-40-10, Kita-ku, Tokyo-to, Japan

Filed Sep. 7, 1982, Ser. No. 415,364
Claims priority, application Japan, Sep. 12, 1981, 56-144399
Int. Cl.⁴ B03C *3/66*
U.S. Cl. 55—139 **7 Claims**



1. An electrostatic precipitator comprising:

a collection duct;

a group of grounded collecting electrodes;

a group of discharge electrodes and a power supply for generating voltage pulses of short duration and applying the same to said electrodes comprising:

a high voltage ac voltage source;

an electrical energy storage device;

a rectifier connecting said ac charging source directly to said storage device; and

an externally-controlled high speed synchronous switching unit, said switching unit comprising:

a first terminal connected to said storage device;

a second terminal adapted for connection to said group of discharge electrodes;

a spark gap disposed between said first and second terminals; and

means for synchronously lowering the resistance of said spark gap, whereby said storage device is charged during one half cycle of said ac voltage source and during a predetermined portion of the next half cycle, said means for synchronously lowering the resistance of said spark gap lowers the resistance of said spark gap and discharges said storage device to a load.

4,541,849
COLLECTOR ELECTRODE ASSEMBLY FOR TUBULAR ELECTROSTATIC PRECIPITATOR

Horst J. Schade, Frankfurt am Main; Rolf Gelhaar, Weilrod, and Wolfgang Hartmann, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

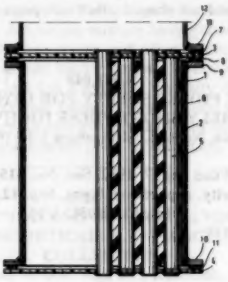
Filed Jan. 20, 1984, Ser. No. 572,585
Claims priority, application Fed. Rep. of Germany, Jan. 28, 1983, 3302851
Int. Cl.⁴ B03C *3/49*
U.S. Cl. 55—146 **3 Claims**

1. In a tubular electrostatic precipitator, a collecting-tube assembly forming a middle part thereof and comprising:

a cylindrical steel shell formed internally with an acid-resisting coating and defining a housing;

a pair of tube sheets of synthetic resin material disposed at opposite ends of said shell;

a multiplicity of spaced-apart plastic collecting tubes defining



collecting electrodes positioned in and welded to said tube sheets; and

a body of foamed synthetic resin material filling said housing between said tube sheets and around said collecting tubes.

4,541,850

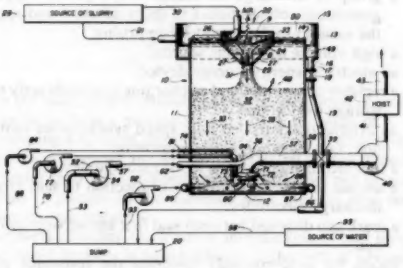
SLURRY INPUT DEVICE

Ronald L. Oda, and William T. Sweeney, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Jul. 2, 1984, Ser. No. 627,160

Int. Cl.[4] B01D *19/00*

U.S. Cl. 55—204 **2 Claims**



1. In combination with a tank having a top and at least having a closed side and bottom for receiving mined material in the form of a fluid and particulate slurry that may contain entrapped air, an overflow means mounted through said side wall near said top, and means for removing fluid and particulate material mounted inside said tank near said bottom, a slurry inlet apparatus for turbulence reduction, comprising:

a. an inlet chamber first portion, said first portion having a top and a substantially circular side wall, said first portion being mounted inside said tank means so that the top of said chamber is substantially the same as the level of said overflow means, said top having a cover with an opening therein to permit air exhaust;

b. an inlet chamber second portion attached below said first portion, said second portion consisting of an inverted truncated cone terminating in an outlet port in communication with the inside of said tank, and having plural vanes attached radially to the inside wall adjacent the outlet port; and

c. means for mounting an inlet pipe means tangentially to said inlet chamber first portion;

whereby mined material slurry containing entrapped air entering said inlet means will generate a vortex causing said air to move toward the center axis of said vortex for exhaust upward out of said fluid and particulate materials, and causing said solid particulate to move around the circular side wall of said first portion where gravity will transfer the fluids and particulates downward around said second portion and through the vanes and outlet port.

4,541,851

REACTOR AND APPARATUS FOR PURIFYING BY ADSORPTION

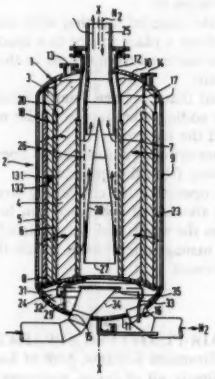
Maurice Bosquain; Maurice Grenier; Léon Hay, all of Paris; Paul Lapeyre, Bry-sur-Marne; Jean-Yves Lehman, Maisons Alfort; Pierre Petit, Chatenay-Malabry, and Pierre Sauty, Versailles, all of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Feb. 21, 1984, Ser. No. 581,677

Claims priority, application France, Feb. 28, 1983, 83 03250

Int. Cl.[4] B01D *53/04*

U.S. Cl. 55—208 **23 Claims**



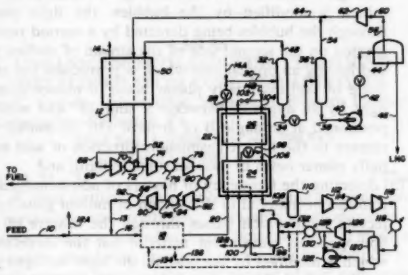
1. A reactor, in particular a container for purifying fluid by adsorption, comprising a case which has an axis and defines a first region and a second region respectively for connection to a source and to an outlet of a fluid to be treated, said first and second regions being separated by at least one space containing an annular bed of particles of active material, said at least one space being defined by two grates and having the shape of a sleeve having vertical generatrices, at least one of said grates being rigid in the axial direction, the grates being free to expand thermally in the axial direction independently of one another, and the two grates located respectively in an innermost position and an outermost position being rigid in the radial direction.

22. An apparatus for purifying by adsorption, comprising a source of a fluid to be purified and at least one purifying container which comprises a case which has an axis and defines a first region and a second region, said first and second regions being separated by at least one space containing an annular bed of particles of adsorbent material, said at least one space being defined by two grates and having the shape of a sleeve having vertical generatrices, at least one of said grates being rigid in the axial direction, the grates being free to expand thermally in the axial direction independently of one another, and the two grates located respectively in an innermost position and an outermost position being rigid in the radial direction, an outer region of said regions of the container being connected to said source of fluid to be purified.

4,541,852
DEEP FLASH LNG CYCLE

Charles L. Newton, Bethlehem; Wayne G. Stuber, Whitehall, and Michael A. Patterson, Lansdowne, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Feb. 13, 1984, Ser. No. 579,838
Int. Cl.[4] F25J 3/00
U.S. Cl. 62—11 13 Claims



1. In a process for the production of liquefied natural gas wherein a feed natural gas is liquefied and subcooled by heat exchange against at least one closed cycle refrigerant, the improvement comprising overcoming the problems of mismatched compressor drivers, inefficient liquefaction operation or high equipment capital costs by subcooling the liquefied natural gas to a relatively warm temperature, reducing the pressure of the subcooled liquefied natural gas and flashing the same in a phase separation in at least one stage wherein a gaseous phase natural gas stream is recovered in excess of that necessary for plant fuel and the excess gaseous phase natural gas is recompressed and recycled to the feed natural gas upstream of the liquefaction and subcooling in order to shift compression power requirements from the closed cycle refrigerant to the compression requirements of the gaseous phase natural gas recycle stream.

7. In a system for the production of liquefied natural gas wherein a feed natural gas stream is liquefied and subcooled against at least one closed cycle refrigerant in a multiple bundle heat exchanger, the improvement comprising means for overcoming the problems of mismatched compressor drivers, inefficient liquefaction operation or high equipment capital costs including:

(a) means for reducing the pressure of the liquefied and subcooled natural gas including at least one phase separation vessel for removing a gaseous phase natural gas recycle stream;

(b) compression means for recompressing the gaseous phase natural gas from said separation vessel;

(c) means for removing a portion of the recompressed natural gas as plant fuel; and

(d) means for introducing the remaining recompressed natural gas into the feed natural gas stream.

4,541,853
APPARATUS FOR PRODUCING GLASS FIBERS

Timothy A. Sullivan, Newark, Ohio; Gregory L. Morgan, Jackson, Tenn., and Arthur S. Warner, Hebron, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

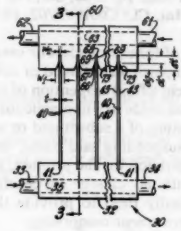
Filed Oct. 2, 1984, Ser. No. 657,110
Int. Cl.[4] C03B 37/085
U.S. Cl. 65—12 3 Claims

1. Apparatus for producing glass filaments comprising

a feeder for supplying streams of molten glass to be attenuated into filaments,

means for attenuating the streams into filaments, and

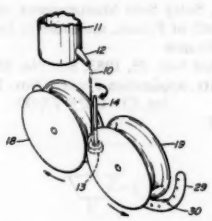
an environmental control means adapted to remove heat from the fiber forming region comprised of a plurality of fin-like members positioned between the streams of molten glass being attenuated into filaments, the first end of said members being permanently secured to a first cooling manifold and the second end of said members being releasably positioned within notches in said second manifold wherein said notches have a tapered entrance section leading to a contact section to contact at least one side of said fin-like members at said second end.



4,541,854
ENHANCED SURFACE FIBERIZER

Werner W. Schonhaar, Forest; Keith Wallace, Corunna, and Tim R. Dickson, Toronto, all of Canada, assignors to Fiberglas Canada, Inc., Toronto, Canada

Filed Sep. 10, 1984, Ser. No. 648,486
Int. Cl.[4] C03B 37/05
U.S. Cl. 65—15 6 Claims



1. Apparatus for converting molten thermoplastic raw material into fibers, particularly in the production of mineral wool from molten raw material, said apparatus comprising, in combination:

(a) a molten raw material stream supply means including discharge means for generating a stream of a molten material;

(b) a distributor cup wheel operatively associated with said discharge means and adapted to be driven to rotate about an axis of rotation, said distributor cup having a concave face provided with an annular cavity for receiving the molten raw material, and a peripheral rim limiting the annular cavity, said rim being provided with a plurality of generally radially outwardly directed discrete flow passages;

(c) at least two fiberizing rotors, each having a concavely rounded peripheral groove, said rotors being adapted to be driven for rotation and being each arranged to rotate within a plane generally perpendicular to the plane of rotation of said cup, said rotors being so arranged and disposed relative to the distributor cup that the peripheral grooves generally entirely surround the peripheral rim at a plane perpendicular to the axis of rotation of the cup and generally coincident with the discrete flow passages.

4,541,855
METHOD OF FORMING A GLASS OR CERAMIC PRODUCT

George W. Scherer, Big Flats, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Aug. 18, 1983, Ser. No. 524,372
Int. Cl.[4] C03B *19/02, 19/06*
U.S. Cl. 65—18.1 3 Claims

1. In a method of forming a glass or ceramic product by the direct casting of a particulate fumed or other submicron oxide suspension, wherein a fluid suspension of the particulate fumed or other submicron oxide in a non-aqueous vehicle is prepared, the vehicle consisting of a substituted or unsubstituted hydrocarbon fluid for suspending said oxide, the suspension is cast into a final configuration for the product, gelled in that configuration, dried with no change in configuration except for shrinkage, and finally fired to provide the glass or ceramic product, the improvement comprising:

(i) including of at least one dispersant in the suspension, said dispersant consisting of an agent effective to disperse inorganic material in an organic medium by steric hindrance, electrical double layer formation or polar screening;

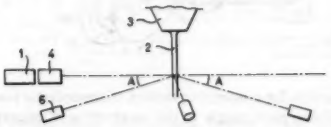
(ii) maintaining the suspension free of any gelling agents, and employing, as the vehicle for the suspension, a vehicle which does not add stability to the suspension; and

(iii) adding the dispersant to the suspension in an amount at least sufficient to provide effective dispersion of the particulate fumed or other submicron oxide in the vehicle to permit the suspension to be cast into a final configuration but insufficient to delay gellation of the suspension for a period longer than about 48 hours.

4,541,856
PROCESS AND DEVICE FOR THE ANALYSIS OF THE HETEROGENEOUS FEATURES IN A TRANSPARENT MATERIAL

Alain Maillard, Soisy Sous Montmorency, and Michel Pichon, Eaubonne, both of France, assignors to Isover Saint-Gobain, Courbevoie, France

Filed Nov. 25, 1983, Ser. No. 554,957
Claims priority, application France, Nov. 25, 1982, 82 19753
Int. Cl.[4] C03B *17/00*
U.S. Cl. 65—29 20 Claims



1. A method of analyzing a stream of molten glass to detect the frequency of translucent bubbles of gas, blisters of non-homogeneous translucent material, and opaque solid particles entrained in the stream of molten glass, said method comprising the steps of:

(a) directing as essentially planar beam of monochromatic light having a wavelength no greater than 3×10^{-6} m through the stream of molten glass in a light transmission direction from a first side of the stream of molten glass to a second side of the stream of molten glass, whereby said essentially planar beam of monochromatic light is diffused in identifiably different fashions by translucent bubbles of gas, blisters of non-homogeneous translucent material, and solid opaque particles entrained in the stream of molten glass;

(b) detecting the frequency of opaque solid particles entrained in the stream of molten glass by detecting light reflected from the opaque solid particles into a first receiver located on the first side of the stream of molten glass and having an optical axis which is positioned out of the plane of said essentially planar beam of monochromatic light by an angle of between 5° and 20° and which is positioned at an angle D to the optical axis of the transmitter of not less than 150° measured with respect to the light transmission direction of said essentially planar beam of monochromatic light;

(c) detecting the frequency of translucent bubbles of gas in the stream of molten glass by detecting light which passes through the translucent bubbles of gas but the direction of which is modified by the bubbles, the light passing through the bubbles being detected by a second receiver located on the second side of the stream of molten glass and having an optical axis which is positioned out of the plane of said essentially planar beam of monochromatic light by an angle of between 5° and 20° and which is positioned at an angle B of at most 110° measured with respect to the light transmission direction of said essentially planar beam of monochromatic light; and

(d) detecting the frequency of blisters of non-homogeneous translucent material in the stream of molten glass by detecting light which passes through the blisters of non-homogeneous translucent material but the direction of which is modified by the blisters, the light the light passing through the blisters being detected by a third receiver located on the second side of the stream of molten glass and having an optical axis which is positioned out of the plane of said essentially planar beam of monochromatic light by an angle of between 5° and 20° and which is positioned at an angle C of at most 50° measured with respect to the light transmission direction of said essentially planar beam of monochromatic light.

11. Apparatus for analyzing a stream of molten glass to detect the frequency of translucent bubbles of gas, blisters of non-homogeneous translucent material, and opaque solid particles entrained in the stream of molten glass, said apparatus comprising:

(a) a source of an essentially planar beam of monochromatic light having a wavelength no greater than 3×10^{-6} m, said source having an optical axis and being positioned so that, during use of the apparatus, the essentially planar beam of monochromatic light is passed through the stream of molten glass in a light transmission direction from a first side of the stream of molten glass to a second side of the stream of molten glass, whereby the essentially planar beam of monochromatic light is diffused in identifiably different fashions by translucent bubbles of gas, blisters of non-homogeneous translucent material, and opaque solid particles entrained in the stream of molten glass;

(b) a first receiver means located on the first side of the stream of molten glass for detecting the frequency of opaque solid particles entrained in the stream of molten glass by detecting light reflected from the opaque solid particles into said first receiver means, said first receiver means having an optical axis which is positioned out of the plane of said essentially planar beam of monochromatic light by an angle of between 5° and 20° and which is positioned at an angle D to the optical axis of the source of not less than 150° measured with respect to the light transmission direction of said essentially planar beam of monochromatic light;

(c) a second receiver means for detecting the frequency of translucent bubbles of gas in the stream of molten glass by detecting light which passes through the translucent bubbles of gas but the direction of which is modified by the bubbles, said second receiver means having an optical axis which is positioned out of the plane of the essentially planar beam of monochromatic light by an angle of between 5° and 20° and which is positioned at an angle B of at most 110° to the optical axis of said source measured with respect to the light transmission direction of said essentially planar beam of monochromatic light; and

(d) a third receiver means for detecting the frequency of blisters of non-homogeneous translucent materials in the stream of molten glass by detecting light which passes

through the blisters of non-homogeneous translucent materials but the direction of which is modified by the blisters, said third receiver means having an optical axis which is positioned out of the plane of the essentially planar beam of monochromatic light by an angle of between 5° and 20° and which is positioned at an angle C of at most 50° to the optical axis of said source measured with respect to the light transmission direction of said essentially planar beam of monochromatic light.

4,541,857

ORGANIC GROWTH INDUCING COMPOUND DEVELOPED FROM COAL AND ADDITIVES

Ross C. Snively, Salem, Ohio, assignor to Western Production Corporation, Emlenton, Pa.

Filed Sep. 1, 1981, Ser. No. 298,512

Int. Cl.⁴ C05F *11/02*

U.S. Cl. 71—24 **2 Claims**

1. A plant fertilizer composition comprising an admixture of (a) particulate coal containing releasable plant nutrients, the maximum particle size of said coal being about 100 mesh, said particulate coal being present in an amount by about 50 to 75 weight percent based on the total weight of said composition, (b) sodium molybdate as an agent for releasing said plant nutrients in a form that the plants are capable of using, said sodium molybdate being present in an amount ranging from about 0.001 to 0.100 percent by weight based on the total weight of said composition and (c) an auxiliary plant nutrient release agent comprising one or more of ferric sulfate, magnesium sulfate, sodium chloride, zinc sulfate, zinc chloride, copper sulfate, sulfur, hydrated sodium borate, burnt limestone and cobalt carbonate, said auxiliary plant nutrient release agent being present in an amount ranging from about 24.900 to 49.999 weight present based on the total weight of said composition.

4,541,858

CHLORINATED PHOSPHORYLMETHYLCARBONYL DERIVATIVE PLANT PROTECTION AGENTS

Theodor Pfister, Monheim; Ludwig Eue, Leverkusen; Robert R. Schmidt, Bergisch-Gladbach, and Gerd Hänssler, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

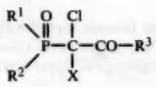
Filed Mar. 20, 1984, Ser. No. 591,615

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1983, 3313070

Int. Cl.⁴ A01N *57/18, 57/22, 57/24*; C07F *9/65*

U.S. Cl. 71—86 **11 Claims**

1. A chlorinated phosphorylmethylcarbonyl derivative of the formula



in which

R^1 represents radicals from the series comprising alkyl with up to 6 carbon atoms, alkoxy with up to 6 carbon atoms and aralkyl and aralkoxy with 6 to 10 carbon atoms in the aryl part and up to 2 carbon atoms in the alkyl part, in each case optionally monosubstituted or polysubstituted by halogen or C_1–C_4-alkoxy, or represents phenyl which is optionally monosubstituted or polysubstituted by halogen, nitro, C_1–C_4-alkyl, C_1–C_4-alkoxy and/or C_1–C_4-alkoxycarbonyl, and

R^2 represents alkoxy with up to 6 carbon atoms or aralkoxy with 6 to 10 carbon atoms in the alkyl part and up to 2 carbon atoms in the alkyl part, in each case optionally monosubstituted or polysubstituted by halogen or C_1–C_4-alkoxy, or R^1 and R^2 together represent a branched or straight-chain alkanedioxy radical with 2 to 5 carbon atoms in the alkyl part,

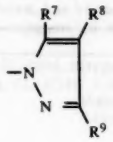
X represents hydrogen or chlorine and

R^3 represents the grouping

in which

R^4 represents hydrogen or alkyl with up to 4 carbon atoms and

R^5 represents an alkoxycarbonyl radical with up to 4 carbon atoms in the alkyl part or represents an optionally substituted pyrazolyl radical



wherein

R^7 and R^9 are identical or different and represent hydrogen or C_1–C_4 alkyl and

R^8 represents hydrogen, halogen or C_{1-C4}-alkyl; or

if X represents chlorine, R^3 also may represent cycloalkyl with 3 to 6 carbon atoms, which is optionally monosubstituted or polysubstituted by C_1–C_3-alkyl.

10. A method of combating fungi and undesired plants which comprises administering to such fungi or plants or to a habitat thereof a fungicidally or selectively herbicidally effective amount of a compound according to claim 1.

4,541,859

METHOD FOR REDUCING THE PHYTOTOXICITY OF AGRICULTURAL MACHINE OIL AND A COMPOSITION USEFUL FOR THE METHOD

Takashi Tozawa, Yokohama; Masahiro Endo, Zama, and Yukio Eiraku, Ogori, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Filed Dec. 22, 1983, Ser. No. 564,188

Claims priority, application Japan, Dec. 28, 1982, 57-234536

Int. Cl.⁴ A01N *25/32*

U.S. Cl. 71—88 **10 Claims**

1. A method for reducing the phytotoxicity of agricultural machine oil in its application to an agricultural or horticultural plant to exterminate noxious insects and acarines, characterized in that, prior to or at the same time as the application of the machine oil, a sucrose fatty acid ester is applied to the agricultural or horticultural plant in an amount of from 0.1 to 50 parts by weight per 100 parts by weight of the machine oil, in the form of an aqueous solution containing from 0.001 to 1 wt/v % of the ester.

4,541,860

STABLE COMPOSITIONS OF N-(3,4-DICHLOROPHENYL)-N'-METHOXY-N'-METHYLUREA (LINURON) AND 2,6-DINITRO-N,N-DIPROPYL-4-TRIFLUORO-METHYLANILINE (TRIFLURALIN) IN EMULSION

Enzo Civilla, Milan; Piero Furlan, Peschiera Borromeo, and Sergio Maccone, Milan, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Continuation of Ser. No. 270,804, Jun. 5, 1981, abandoned. This application Sep. 22, 1983, Ser. No. 534,764

Claims priority, application Italy, Jun. 6, 1980, 22622 A/80

Int. Cl.⁴ A01N *25/22*

U.S. Cl. 71—120 **4 Claims**

1. A weed-killing composition which is emulsifiable in water, does not give rise to crystalline precipitates for at least 17 hours after emulsification, and consists of:

	% by weight
2,6-dinitro-N,N—dipropyl-4-trifluoromethylaniline	20.0–36.0
N—(3,4-dichlorophenyl)-N'—methoxy-N'—methylurea	5.0—12.4
acetophenone	17.0–36.1
emulsifiers	5.0–10.5
xlylene or mixed alkylbenzenes mixable with acetophenone	53.0–5.0

4,541,861

PROCESS FOR THE PRODUCTION OF COBALT, NICKEL AND COPPER POWDERS FROM CHELATING EXTRACTANTS

George P. Demopoulos, Montreal, and Philip A. Distin, Pointe Claire, both of Canada, assignors to The Royal Institution for the Advancement of Learning (McGill University), Montreal, Canada

Filed Sep. 13, 1984, Ser. No. 650,211

Int. Cl.⁴ C22B *15/12, 23/04*

U.S. Cl. 75—0.5 A **20 Claims**

1. A process for the production of cobalt, nickel and copper powders from chelating extractants, which comprises reacting with hydrogen a liquid organic medium containing in solution a quinoline-based chelating extractant having bonded thereto a metal selected from the group consisting of cobalt, nickel and copper, and a hydrogenation inhibitor consisting of a linear or branched aliphatic alcohol containing from 7 to 13 carbon atoms, at a temperature of about 150° to about 350° C. and a pressure of about 50 to about 600 p.s.i. to cause precipitation of the metal in powder form while preventing decomposition of the chelating extractant, said liquid organic medium further containing a seed of the precipitating metal whereby to avoid undesirable deposition of the metal in plated form.

4,541,862

LADLE STEELMAKING METHOD AND APPARATUS

Charles W. Finkl, Evanston; Albert L. Lehman, Glenview, and Herbert S. Philbrick, Jr., Wilmette, all of Ill., assignors to A. Finkl & Sons Co., Chicago, Ill.

Filed Nov. 30, 1982, Ser. No. 445,600

Int. Cl.⁴ C21C *7/10, 5/52*

U.S. Cl. 75—12 **10 Claims**

1. A method of steel making comprising the operations of

(1) adjusting the degree of vacuum of a steel melt contained in a receptacle having a bottom and side walls so as to effect gas removal from the said melt at a rate just short of that which would cause boilover of the said melt,

(2) stirring the said melt at a rate effective to transport molten steel of said melt from the bottom of said receptacle to the surface, operations (1) and (2) being carried out simultaneously, and

(3) subjecting the said melt to an alternating current heating arc which is struck between electrode means and said steel during at least a portion of the time operations (1) and (2) are carried out.

4,541,863

METHOD FOR THE TREATMENT OF PHOSPHURETTED SLAG

Paul-Victor Riboud, and Christian Gatellier, both of Metz, France, assignors to Institut de Recherches de la Siderurgie Francaise, Saint-Germain-Laye, France

Continuation of Ser. No. 380,007, May 19, 1982, abandoned. This application May 29, 1984, Ser. No. 615,694

Claims priority, application France, May 22, 1981, 81 10401

Int. Cl.⁴ C21B *3/04*

U.S. Cl. 75—24 **8 Claims**

1. Process for the hot oxidation treatment of alkaline earth phosphide bearing slag obtained by refining a metal bath having undergone a dephosphorylation treatment in reducing phase by an alkaline earth metal, consisting of oxidizing said alkaline earth phosphide by adding to said slag an easily fusable and strongly oxidizing solid adjuvant.

4,541,864

METHOD AND APPARATUS FOR RECOVERY AND RECYCLING OF HEAT FROM HOT GASES

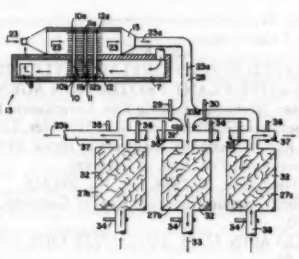
Günter Ratschat, Duisburg, Fed. Rep. of Germany, assignor to Mannesmann Demag AG, Duisburg, Fed. Rep. of Germany

Division of Ser. No. 200,002, Oct. 23, 1980, Pat. No. 4,434,004. This application Oct. 31, 1983, Ser. No. 546,870

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1979, 2952216

Int. Cl.⁴ C21B *5/00*

U.S. Cl. 75—41 **1 Claim**



1. A method for regenerating the molecular screening materials in a blast furnace metallurgical operation, comprising the steps of:

(a) providing a blast furnace metallurgical operation;

(b) directing the fully combusted exhaust gases from said blast furnace metallurgical operation to a heat exchanger means;

(c) transferring a portion of the heat of said fully combusted exhaust gases to said heat exchanger means;

(d) venting, to the atmosphere, said fully combusted exhaust gases;

(e) conducting fresh, atmospheric air to and through said heat exchanger means;

(f) transferring to said fresh, atmospheric air, at least a portion of said heat previously transferred to said heat exchanger means;

(g) further conducting said now-heated fresh, atmospheric air away from said heat exchanger means; and

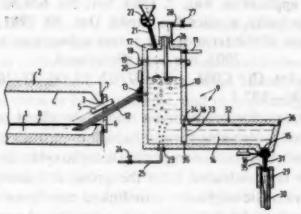
(h) passing said now-heated fresh, atmospheric air to and through molecular screening materials to thereby regenerate said screening materials for further use in providing oxygen-enriched and dehumidified air to said blast furnace metallurgical operation.

4,541,865

CONTINUOUS VACUUM DEGASSING AND CASTING OF STEEL

William L. Sherwood, 533 Granville St., 5th Floor, Vancouver, B.C. V6C 1Y6, Canada

Filed May 16, 1984, Ser. No. 610,884
Int. Cl.[4] B22D *19/00*; C21C *7/00*
U.S. Cl. 75—46 **20 Claims**



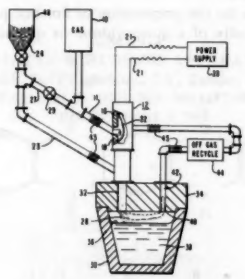
1. In a method for continuous vacuum processing and casting of molten steel and other metals in which a molten metal column is maintained with its top surface under vacuum in a continuous post-treatment vessel located adjacent to a continually replenished molten metal bath, and said column is fed with metal from said bath by way of a withdrawal tube with the inlet end inserted below and withdrawing metal from beneath the surface of said bath and the outlet directing the metal into said column, with a lateral extension of the lower portion of said column forming a pouring pool confined within a tundish chamber section equipped with at least one nozzle outlet for pouring of metal at a level below the surface level of said molten bath; the combination thereof with: sealing of said pouring pool apart from the outside atmosphere thus substantially preventing any contact of the molten metal with the atmosphere during metal passage from within said bath, through said tube, column and pouring pool, at least until passage of molten metal through said nozzle outlet.

4,541,866

HOT INJECTION LADLE METALLURGY

Thomas N. Meyer, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 26, 1984, Ser. No. 574,306
Int. Cl.[4] C21C *7/02*
U.S. Cl. 75—53 **15 Claims**



1. A method of making particulate additions to a melt contained in a covered ladle without significant loss of melt temperature and characterized by minimization of contact between the particulate additions and the refractories, comprising:

heating a gas stream in a non-transferred plasma arc electric heater to a temperature greater than that of the melt;

introducing the ladle addition into the thus heated gas stream whereby the temperature of the ladle addition is raised to be about equal to or greater than the melt temperature;

introducing the heated gas stream having the heated entrained ladle addition into the ladle with substantially all of the ladle addition separating out of the gas stream as the gas stream impinges on the melt, the gas stream becoming an off gas and the heated ladle addition combining with the melt without substantially reducing the temperature thereof; and

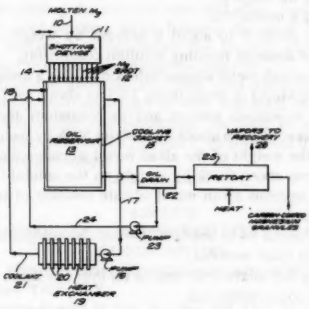
exhausting the off gas from the ladle.

4,541,867

VARNISH-BONDED CARBON-COATED MAGNESIUM AND ALUMINUM GRANULES

Ramaswami Neelameggham; Hedayat Abedi, both of Salt Lake City, Utah; John C. Priscu, Las Vegas, Nev., and Michael H. Legge, Tooele, Utah, assignors to Amax Inc., Greenwich, Conn.

Filed Mar. 20, 1984, Ser. No. 591,657
Int. Cl.[4] C21C *7/02*
U.S. Cl. 75—58 **9 Claims**



1. An addition agent for treating molten metals comprising, coated granules of a metal selected from the group consisting of magnesium, aluminum and alloys thereof of size ranging from of about 30 to 150 mesh (U.S. Standard),

said coating characterized by a varnish-bonded, carbon-containing layer produced from a polymerizable oil thermally polymerized to a varnish and then partially carbonized by thermal decomposition,

said coated granules being further characterized by being free flowing, substantially non-hygroscopic and exhibiting reduced pyrophoricity.

4,541,868

RECOVERY OF NICKEL AND COBALT BY CONTROLLED SULFURIC ACID LEACHING

E. Harris Lowenhaupt, Gasquet, Calif.; John E. Litz, Lakewood, and Dennis L. Hoe, Broomfield, both of Colo., assignors to California Nickel Corporation, Crescent City, Calif.

Filed Jul. 22, 1983, Ser. No. 516,235
Int. Cl.[4] C01G *53/00*, *55/00*; C22B *3/00*
U.S. Cl. 75—101 R **11 Claims**

1. A method of recovering nickel and cobalt from lateritic ores by sulfuric acid leaching comprising:

(a) mixing the sulfuric acid for said leaching with said ore at a temperature from about ambient temperature to below the leach temperature of step (b);

(b) leaching said nickel and cobalt from said ore at a temperature above about 200° C. to form a nickel- and cobalt-containing pregnant leach liquor and a leached residue with no sulfuric acid addition at said leach temperature;

(c) separating said pregnant leach liquor from said residue; and

(d) recovering said nickel and cobalt from said pregnant leach liquor.

4,541,869

PROCESS FOR FORMING FOUNDRY COMPONENTS

Norbert Maak; Wolfgang Friedemann, both of Neuss; Hans Fehr, Duesseldorf, and Kurt Feulner, Essen, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 381,101, May 24, 1982, abandoned. This application Aug. 15, 1983, Ser. No. 523,827

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1981, 3122244

Int. Cl.⁴ B28B *7/34*

U.S. Cl. 106—38.35 **10 Claims**

1. A process for forming a foundry core or mold component comprising the steps of

(I) forming a mixture of

(a) from about 3 to about 6 percent by weight of a preformed aqueous bonding solution comprising

(A) an alkali metal silicate solution having a molar ratio of SiO_2:Me_2O of from about 2.4:1 to about 3.4:1, wherein Me represents sodium and/or potassium and a solids content of from about 35 to about 50% by weight, based on the weight of the alkali metal silicate solution; and

(B) from about 0.1% by weight to the solubility limit in the aqueous alkali metal silicate solution of triethanolamine; and

(b) from about 94 to about 97 percent by weight of a finely divided filler material;

(II) shaping the mixture formed in (I) into the shape of a core or mold component; and

(III) curing the shaped mixture.

4,541,870

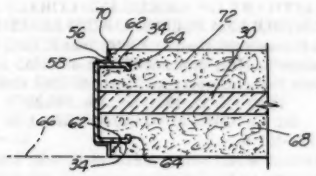
INSULATING CEMENTITIOUS MIXTURE AND METHOD OF USE

Dave D. Barrett, Jr., 1416 F St., Lawton, Okla. 73501

Filed Aug. 3, 1984, Ser. No. 637,287

Int. Cl.⁴ C04B *7/356*

U.S. Cl. 106—96 **20 Claims**



1. A cementitious mixture comprising:

a coated, insulating aggregate;

cement; and

a fibrous material for binding and distributing said aggregate in said cement when admixing said mixture with water.

4,541,871

WATER-ABSORBENT RESIN HAVING IMPROVED WATER-ABSORBENCY AND IMPROVED WATER-DISPERSIBILITY AND PROCESS FOR PRODUCING SAME

Shigeji Obayashi, Akashi; Morio Nakamura, Kakogawa; Takushi Yamamoto, Kobe, and Masato Fujikake, Kakogawa, all of Japan, assignors to Seitetsu Kagaku Co., Ltd., Hyogo, Japan

Continuation-in-part of Ser. No. 448,150, Dec. 9, 1982,. This application Aug. 7, 1984, Ser. No. 638,601

Claims priority, application Japan, Dec. 30, 1981, 56-213885

The portion of the term of this patent subsequent to Mar. 26, 2002, has been disclaimed.

Int. Cl.⁴ C08L *1/28, 51/02, 33/08, 33/10*

U.S. Cl. 106—197.2 **11 Claims**

1. A process for producing a water-absorbent resin having an improved water-absorbency, which comprises crosslinking a water-absorbent resin comprising a carboxylate as a constitutent of the resin selected from the group consisting of crosslinked polyacrylic acid salts, crosslinked copolymers of acrylic acid salt and methacrylic acid salt, crosslinked saponification products of methyl acrylate-vinyl acetate copolymer, crosslinked saponification products of starch-ethyl acrylate graft copolymer, crosslinked starch-acrylic acid salt graft copolymer, crosslinked saponification products of starch-methyl methacrylate graft copolymer, crosslinked saponification products of starch-acrylonitrile graft copolymer and crosslinked sodium carboxymethyl cellulose, with 0.005–5% by weight of a crosslinking agent selected from the group consisting of diglycidyl ether compounds, haloepoxy compounds, aldehyde compounds and isocyanate compounds in the presence of water in a proportion of 0.01 to 1.3 parts by weight per part by weight of the resin in 0.1 to 50 parts by weight, per part by weight of said resin, of an inert solvent which does not affect the water-absorbent resin.

4,541,872

PREPARATION OF PIGMENTARY GRADE PIGMENT FROM CRUDE PIGMENT

Edward E. Jaffe, Wilmington, Del., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

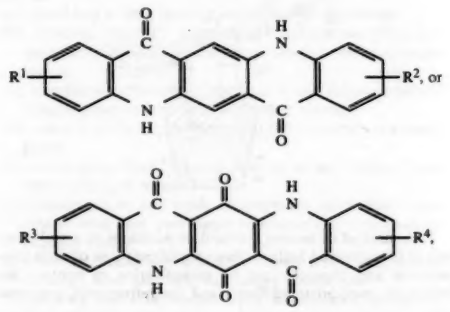
Continuation-in-part of Ser. No. 390,509, Jun. 21, 1982, abandoned. This application Mar. 26, 1984, Ser. No. 594,674

The portion of the term of this patent subsequent to Jun. 19, 2001, has been disclaimed.

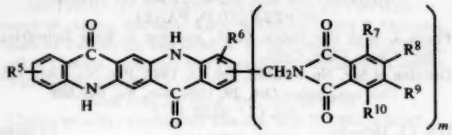
Int. Cl.⁴ C09B *48/00*

U.S. Cl. 106—309 **13 Claims**

1. A process for the preparation of finished pigment which consists essentially of a quinacridone or quinacridone of the formula



and solid solutions or mixtures thereof, with up to 15 wt. % of a quinacridone of the formula



where R^1, R^2, R^3, R^4, R^5, and R^6 are hydrogen, fluorine, chlorine, bromine, methyl or methoxy; R^7, R^9, and R^{10} are hydrogen or chlorine; and R^8 is hydrogen, chlorine, bromine, nitro, alkyl groups of 1 to 5 carbon atoms, alkoxy groups of 1 or 2 carbon toms or benzoylamine, and m is an integer of from 1 to 4, from crude precursors by converting the crude precursor therefor to a low crystallinity aggregated form, followed by milling the low crystallinity pigment in water having a pH from 7 to 14 and from 5 to 25% by weight, based on pigment, of a separate phase comprising an organic liquid which is effective in improving the crystallinity of the pigment particles and recovering a pigmentary grade product.

4,541,873

METHOD AND MANUFACTURE FOR EASILY SPRAY-DRIABLE LOW MOLECULAR WEIGHT SUGARS

Timothy W. Schenz, Haworth, N.J.; William A. Eisenhardt, Jr., Worthington, Ohio, and Fouad Z. Saleeb, Pleasantville, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Sep. 13, 1982, Ser. No. 417,280
Int. Cl.[4] C13F *5/00*
U.S. Cl. 127—46.1 **11 Claims**

1. The method for producing spray-dried, low-molecular-weight sugar powders comprising the steps of:

(a) forming an aqueous solution comprised of a metal cation-containing compound and low-molecular-weight sugars selected from the group consisting of fructose, glucose, corn syrups having a D.E. of from 36 to 100 and combinations thereof, said low-molecular-weight sugars being substantially the only saccharides in the solution, said compound being present in an amount which raises the pH of the solution to at least 9.0 and wherein the molar ratio of metal cation to saccharide is from about 0° to 1.5:1,

(b) forming a cation-sugar complex in said solution; and then

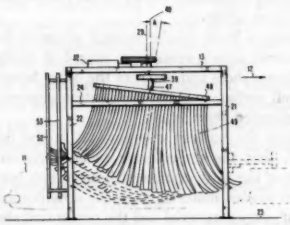
(c) spray-drying the solution to obtain a cation-sugar complex-containing powder which complex is composed of a cation linked to one or more sugars and which powder remains free-flowing upon exposure to ambient conditions.

4,541,874

VEHICLE SCRUBBING APPARATUS

Judson L. Smith, 5432 Lighthouse La., Tempe, Ariz. 85283

Filed Oct. 3, 1984, Ser. No. 657,083
Int. Cl.[4] B60S *3/06*
U.S. Cl. 134—6 **8 Claims**



1. Vehicle scrubbing apparatus comprising:

means for supporting a vehicle to be scrubbed;

overhead support means;

curtain hanger means mounted to said overhead support means;

vehicle wiping means suspended from said hanger means; and

hanger drive means coupled to said hanger means and to said overhead support means and operable, when actuated, to move said hanger means in a circular path about a first substantially vertical axis, said hanger means being rotatable about an axis inclined with respect to said vertical axis.

4,541,875

CONTROLLING DISTORTION IN PROCESSED COPPER BERYLLIUM ALLOYS

Dudley H. Woodard, 35188 N. Turtle Trail, Willoughby, Ohio 44094, and Lynn J. Ebert, 104 E. 197th, Euclid, Ohio 44119

Filed Mar. 18, 1985, Ser. No. 713,318
Int. Cl.[4] C22F *1/08*
U.S. Cl. 148—11.5 C **29 Claims**

1. In a process for producing formed parts from copper beryllium alloys, which process includes the steps of:

preparing a copper beryllium alloy melt; casting the alloy melt; hot working the cast alloy; solution annealing the alloy; passing the solution annealed alloy through one or more cold-working steps; forming the alloy into a part; and precipitation hardening the formed alloy; the improved process comprising the steps of:

subjecting the alloy on the final cold-working pass to a minimum cold reduction of 45% followed by a primary solution anneal and subjecting the alloy to a light cold reduction of between 5% and 15% followed by a secondary solution anneal.

4,541,876

NONAQUEOUS POWDERED METAL PASTE COMPOSITION

Jennie S. Hwang, Pepper Pike, Ohio, assignor to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 546,794, Oct. 31, 1983,. This application Sep. 11, 1984, Ser. No. 649,494
Int. Cl.[4] B23K *35/34*; C23R *1/12*
U.S. Cl. 148—22 **18 Claims**

1. A nonaqueous powdered metal paste characterized by resistance to slumping during heating to the fusion point of the metal moiety of the paste comprising from 60 to 90 parts by weight of a powdered metal, powdered metal alloy or a blend of powdered metals having a melting point above 500° C. and having a particle size less than 20 mesh (U.S. Standard Sieve Size) and from 0 to 39 parts by weight of a natural or synthetic hydrocarbon having a melting point above 15° C. and below the fusion point of the metal or metal alloy powder, and from 0.5 to 40 parts by weight of a nonaqueous organic liquid compound having a surface tension of from 43 to 65 or higher dynes/cm. at 20° C.

4,541,877

METHOD OF PRODUCING HIGH PERFORMANCE PERMANENT MAGNETS

Hans H. Stadelmaier, and Nadia A. ElMasry, both of Raleigh, N.C., assignors to North Carolina State University, Raleigh, N.C.

Filed Sep. 25, 1984, Ser. No. 654,655
Int. Cl.[4] H01F *1/02*
U.S. Cl. 148—101 **10 Claims**

1. A method of producing high performance permanent magnets characterized by an absence of cobalt, said method comprising the steps of

(a) admixing particles of a master alloy consisting of Fe_2B with Fe powder and particles of a rare earth capable of combining with Fe and B to form a tetraganol compound of $Fe_{14}R_2B$,

(b) compacting the admixture into a predetermined size and shape, and

(c) forming a magnetic material of the Fe_2B, Fe powder and rare earth which includes a major phase of at least one intermetallic compound consisting of Fe-R-B and having a tetragoval crystal structure while controlling the particle size of the crystal structure and imparting magnetic characteristics thereto by sintering the compacted admixture at a temperature within the range of about 700° C. to about 1000° C. for a time period within the range of about a fraction of 1 hour to 36 hours to produce a permanent magnet with high coercivity.

5. A method of producing high performance permanent magnets characterized by an absence of cobalt, said method comprising the steps of

(a) forming milled particles of a master alloy consisting of Fe_2B by melting and casting the master alloy and crushing and milling the cast master alloy to a particle size no larger than about 50 microns,

(b) admixing the master alloy particles with Fe powder and particles of a rare earth capable of combining with the Fe and B to form a tetragonal compound of $Fe_{14}R_2B$,

(c) compacting the admixture into a predetermined size and shape,

(d) forming a magnetic material of the Fe_2B, Fe powder and rare earth which includes a major phase of at least one intermetallic compound consisting of Fe-R-B and having a tetrogonal crystal structure while controlling the particle size of the crystal structure and imparting magnetic characteristics thereto by sintering the compacted admixture at a temperature within the range of about 700° C. to about 1000° C. for a time period within the range of about a fraction of 1 hour to 36 hours to produce a permanent magnet with high coercivity, and

(e) heat treating the magnetic material at a temperature of about 550° to 650° C. for about a fraction of an hour to two hours to enhance the magnetic characteristics thereof.

4,541,878

CAST IRON WITH SPHEROIDAL GRAPHITE AND AUSTENITIC-BAINITIC MIXED STRUCTURE

Horst Mühlberger, Staufenstrasse 29, D-6000 Frankfurt/Main; Brüno Prinz; Wolf Wünder, both of Oberursel; Ulrich Schäfer, Weisloch, and Josef Bognar, St. Leon-Rot, all of Fed. Rep. of Germany, assignors to Horst Mühlberger, Frankfurt/Main, Fed. Rep. of Germany

Continuation of Ser. No. 446,245, Dec. 2, 1982, abandoned, which is a continuation-in-part of Ser. No. 255,999, Apr. 21, 1981, abandoned, which is a continuation-in-part of Ser. No. 153,827, May 27, 1980, abandoned. This application Dec. 16, 1983, Ser. No. 562,999

Int. Cl.[4] C21D *5/06*

U.S. Cl. 148—139 **3 Claims**

1. A method of making a cast iron of mixed austenitic-bainitic structure, which consists essentially of the steps of:

forming a spheroidal graphite cast iron composition containing 0.01 to 0.25% by weight manganese, 0.1 to 1.5% by weight copper, 2.5 to 3.9% by weight carbon, 2.0 to 3.0% by weight silicon, 0.2 to 0.8% by weight molybdenum, 0.01 to 3% by weight nickel, and the balance iron;

subjecting the cast iron to an austenitic heat treatment for 10 to 25 minutes at a temperature of 820° to 830° C.;

rapidly cooling the resulting austenitized cast iron to a temperature of substantially 350° to 400° C. over a period of less than 2 minutes; and

holding the cast iron after the rapid cooling at the latter temperature for a period of 5 to 60 minutes, thereby forming a readily machinable product contrasting with cast irons containing more than 0.3% by weight manganese by reduced hardness and greater ductility.

4,541,879

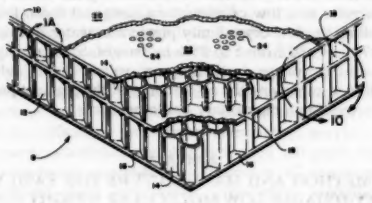
METHOD OF MANUFACTURE OF NOISE SUPPRESSION PANEL

Frank J. Riel, San Diego, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Division of Ser. No. 398,662, Jul. 15, 1982, Pat. No. 4,465,725. This application Oct. 29, 1984, Ser. No. 509,688

Int. Cl.[4] B32B *3/12*

U.S. Cl. 156—64 **7 Claims**



1. A method of manufacturing adhesive bonded sound suppression sandwich panel providing a predetermined flow-through resistance to satisfy acoustical requirements, the structural components comprising first and second non-metallic honeycomb cores, each having a multiplicity of endwise directed cells, an imperforate facing sheet, first and second sheets of microporous material and a perforate sheet, said method comprising the steps of:

(a) preparing the components for assembly by cleaning and degreasing;

(b) applying a solvent base first adhesive coating to one surface of the perforated sheet for bonding thereto the first sheet of microporous material;

(c) removing the solvent from said solvent base first adhesive;

(d) stacking said perforated sheet with the first sheet of microporous material adjacent the first adhesive applied surface, applying a positive pressure between the components and curing said first adhesive;

(e) applying a second adhesive to the faying edges of one surface of each of the honeycomb cores;

(f) stacking the honeycomb cores, with the second sheet of metallic microporous material sandwiched between the adhesive coated surfaces of the honeycomb cores, applying a positive pressure between the components and curing the first adhesive;

(g) applying a layer of the second adhesive between one honeycomb core's remaining open-cell surface and the imperforate sheet and between the other honeycomb core open-cell surface and the perforation exposed surface of the perforated sheet; and

(h) stacking the various components in the following sequence, first the imperforate sheet, then one open-cell surface of the now combined honeycomb cores and first sheet of porous material, then the now combined second sheet of porous material and the perforated sheet with the perforated surface adjacent the open cells of the other honeycomb core, applying a positive pressure between the outer surfaces toward the center and curing the second adhesive.

4,541,880
METHOD OF MAKING OVERLAID PLYWOOD

Joseph W. Arena, Burnaby; Karle B. Gilson; David T. Malcolm, both of Vancouver, and John A. R. Mellander, Maple Ridge, all of Canada, assignors to Crown Forest Industries Limited, Vancouver, Canada

Filed Feb. 27, 1984, Ser. No. 584,126
Claims priority, application Canada, Sep. 9, 1983, 436397
Int. Cl.[4] B32B *35/00*
U.S. Cl. 156—94 **43 Claims**

APPLY GLUE TO VENEER PLYS
COLD PRESS
REPAIR DEFECTS IN SURFACE VENEER WITH THERMOSETTING RESIN
APPLY OVERLAY PAPER TO SURFACE VENEER
HOT PRESS AT 150 - 250 PSI AND 250°F - 350°F
FINISHED OVERLAID PLYWOOD PANEL

1. A method of making overlaid plywood, comprising the steps of:

(a) filling surface defects on a side of a plywood panel with a thermosetting resin;

(b) overlaying said side with a sheet of overlay paper while said resin remains in the liquid state; and,

(c) compressing said panel while heating said panel.

4,541,881
PROCESS FOR MANUFACTURING A MOTOR VEHICLE WINDSHIELD

Francesco Sebastiano, Termoli, Italy, assignor to Societa' Italiana Vetro - SIV - S.p.A., Vasto, Italy

Filed Feb. 7, 1984, Ser. No. 577,785
Claims priority, application Italy, Feb. 25, 1983, 19779 A/83
Int. Cl.[4] B32B *17/00*
U.S. Cl. 156—99 **3 Claims**

1. Process for manufacturing a safety glass windshield for motor vehicles, said windshield having an appreciably lower formation of glass fragments or needles in the event of impact or fracture of the windshield which consists of:

(A) coating a laminated glass windshield comprising two glass sheets bonded together with an intermediate plastic sheet on the clean inside surface of said windshield with a liquid composition consisting of the following components:

(a) a linear polycaprolactone with a molecular weight between about 800 and 1200, and

(b) an aliphatic polyisocyanate in an amount such as to be able to react with 95–100% of the hydroxyl groups present in the aforesaid polycaprolactone, and

(c) vinyl and acrylic ester monomers, capable of providing a clear solution of the above mixed ingredients, wherein 10 to 35% of their total weight consists of a di- or tri-acrylate ester, and

(d) a prepolymer formed from a linear polyester pre-reacted with an hydroxy-acrylate ester and an aliphatic isocyanate, such that the amount of said polymer is between 5 and 15% of the total composition, and

(e) a photoinitiator, being 2-hydroxy-2-methyl-1-phenyl-propan-1-one in an amount of 1 to 3% of the total composition, and

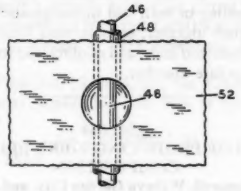
(f) with or without additives to control the flow properties of the liquid composition, and

(B) curing said coated windshield to produce a polymerized film thereon, said film containing urethanes and vinyl-acrylate polymers, and components being employed in such proportions that the ratio of total urethanes to the total vinyl-acrylate polymers in the film is in the range of 1.3:1 to 1.0:1.

4,541,882
PROCESS FOR THE MANUFACTURE OF SUBSTRATES TO INTERCONNECT ELECTRONIC COMPONENTS AND ARTICLES MADE BY SAID PROCESS

Charles L. Lassen, Cold Spring Harbor, N.Y., assignor to Kollmorgen Technologies Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 254,132, Apr. 14, 1981, Pat. No. 4,500,389. This application Jul. 25, 1984, Ser. No. 634,092
Int. Cl.[4] C25D *5/02*
U.S. Cl. 156—150 **36 Claims**



1. A process for making substrates for mounting and interconnecting high density components, the steps comprising:

(a) bonding a conductive film to an electrically-insulated substrate core;

(b) forming a first electrically-insulated circuit pattern on said substrate core;

(c) forming a second circuit pattern over said first pattern;

(d) forming at least one cavity in predetermined locations penetrating said second pattern and substantially exposing said first pattern;

(e) providing interfacing means between the circuit patterns;

(f) applying and affixing filaments, said filaments having at least one conductive portion, over said circuit patterns;

(g) applying a substantially smooth, flat, planar coating over said filaments and said substrate core for the purpose of maintaining the position of the filaments and for providing a surface suitable for mounting surface-mounted components;

(h) at desired locations on said planar surface, forming at least one cavity, penetrating said coating and substantially exposing the conductive portion of said filaments while maintaining the integrity of said filaments; and

(i) providing an interfacing means between said exposed filaments and the external surface of said planar coating.

4,541,883

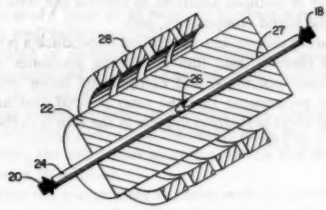
METHOD OF SPLICING A THERMOPLASTIC MANDREL AND A MANDREL MADE BY SAID METHOD

Charles M. Lewis, Silver Springs Shores, Fla., assignor to Dayco Corporation, Dayton, Ohio

Filed Jun. 13, 1984, Ser. No. 620,234

Int. Cl.⁴ B65H *69/02;* **B31F** *5/00;* **G03D** *15/04;* **B29C** *19/02*

U.S. Cl. 156—159 **10 Claims**



1. In a method of making a thermoplastic mandrel comprising the steps of providing at least two thermoplastic rods and thermally bonding the ends of said rods together, the improvement comprising the steps of: incorporating a metallic or metallic oxide filler in the thermoplastic material used to make said thermoplastic rods; forming said rods from said thermoplastic material; cutting the ends of said rods to form wedge shaped ends having apexes; turning said wedge shaped ends of said rods such that the apexes of said wedge shaped ends meet at an angle of rotation of between 5° and 175°; disposing said rods in a mold cavity with forced contact between the ends of said thermoplastic rods; subjecting said rods to a high voltage electrical induction field, the heat resulting from energizing the metallic material in said thermoplastic rods simultaneously causing the melting of both said thermoplastic rod ends; forcing said rod ends together, causing total flowing together of said thermoplastic rod ends; and cooling said rod ends, causing the rod ends to fuse together.

4,541,884

METHOD OF PRODUCING FIBRE-REINFORCED COMPOSITION

Frederic N. Cogswell, Welwyn Garden City, and Philip A. Staniland, Tewin Wood, both of England, assignors to Imperial Chemical Industries, PlC, England

Continuation-in-part of Ser. No. 341,186, Jan. 20, 1982, abandoned. This application Jul. 28, 1983, Ser. No. 518,286

Claims priority, application United Kingdom, Jul. 28, 1982, 8221753

Int. Cl.⁴ B32B *5/02;* **B05D** *1/00*

U.S. Cl. 156—166 **13 Claims**

1. A process of producing a fibre-reinforced composition comprising wetting a plurality of continuous filaments with a melt by drawing the filament through a melt which comprises a mixture of a thermoplastic polymer and a plasticiser for the polymer in the weight ratio between 1:4 and 99:1 of polymer to plasticiser the plasticiser being thermally stable at least up to the temperature of the melt and having volatility characteristics such that the plasticiser can be volatilized from the composition below the decomposition temperature of the thermoplastic polymer but has a sufficiently low volatility at the temperature of the melt to plasticise the polymer in the melt and give a melt of reduced viscosity compared with the melt viscosity of the polymer alone, and substantially reducing the plasticiser content of the composition while the wetted filaments are at a temperature above the glass transition temperature of the polymer alone but below the decomposition temperature of the polymer such that the plasticiser content is 5% or less by weight of the composition.

4,541,885

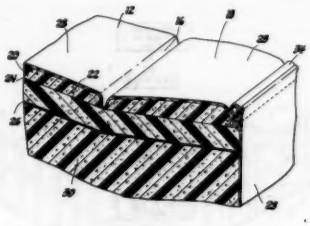
METHOD OF MANUFACTURING A VEHICLE SEAT COVER

Charles Caudill, Jr., Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 503,245, Jun. 10, 1983, abandoned. This application Oct. 25, 1984, Ser. No. 664,933

Int. Cl.⁴ B32B *5/18;* **B29C** *27/04;* **B29D** *27/00;* **B29G** *7/02*

U.S. Cl. 156—220 **3 Claims**



1. A method of making an embossed, covered, polyurethane foam cushion comprising

forming a laminate comprising two polyurethane foam layers bonded to each other, the first of said layers being composed so as to be dielectrically heatable to a fusion temperature for embossing and the second of said foam layers being composed so as to not be fused by such dielectric heating,

bonding a layer of covering material to said laminate overlying said first foam layer,

and pressing an embossed pattern into said cover layer and the first polyurethane layer while dielectrically heating said first layer to fuse it and bond the depressed portion of the cover layer in the desired embossment pattern to the second foam layer without fusing and embossing the second foam layer, the initial thickness of said first layer being suitable to form the desired embossment, and the overall thickness of the two foam layers being sufficient to provide a desired cushion.

4,541,886

AUTOMATIC TAPE LAYING APPARATUS

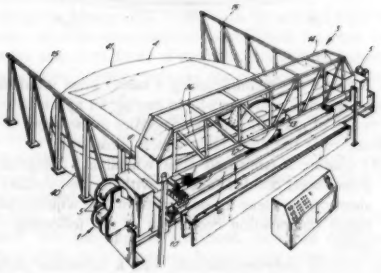
Christopher I. Marlow; Anthony R. Wiltshire, both of Wellingborough, and Ivan E. Hulme, Balderstone, all of England, assignors to British Aerospace PLC, London, England

Filed Mar. 2, 1984, Ser. No. 585,371

Claims priority, application United Kingdom, Mar. 2, 1983, 8305749

Int. Cl.⁴ B32B *31/00*

U.S. Cl. 156—230 **18 Claims**



1. Automatic tape laying apparatus including surface means onto which portions of tape are laid for profiling to shape and size, tool means on which the profiled portions are laid-up to form an article to be cured, and transfer means for transferring

the profiled portions from the surface means to the tool means and effecting laying-up thereon, the transfer means comprising carrier means having a generally arcuate surface region, drive means to roll the carrier means over a portion of tape upon the surface means, holding means arranged to hold the tape portion against the arcuate surface of the carrier means as the carrier means is rolled over said portion, traversing means to traverse the carrier means to a laying-up position over the tool means, said drive means effective to both urge the carrier means against and to roll over the tool means, and means to progressively release regions of the carried portion of tape as those regions lie between the arcuate surface and the tool means whereby the tape portion is progressively laid-up upon the tool means.

4,541,887

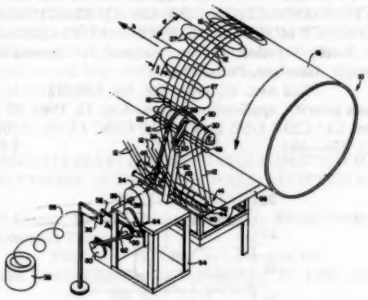
APPARATUS FOR LONGITUDINALLY REINFORCING CONTINUOUSLY GENERATED PLASTIC PIPE

J. Warne Carter, Wichita Falls, Tex., assignor to Ameron Inc., Monterey Park, Calif.

Continuation of Ser. No. 308,022, Oct. 2, 1981, abandoned, which is a division of Ser. No. 71,053, Aug. 30, 1979, Pat. No. 4,308,999. This application Feb. 16, 1983, Ser. No. 466,855

Int. Cl.⁴ B65H *81/06*

U.S. Cl. 156—431 **13 Claims**



10. An apparatus for longitudinally reinforcing continuously generated plastic pipe comprising means for winding a plurality of fiber elements circumferentially onto the pipe, means for depositing continuous fiber elements longitudinally onto the surface of the pipe in a nip formed between the surface of the pipe and the fiber elements being circumferentially wound onto the pipe, and rollers contacting the surface of the pipe at the nip, the circumferential fiber elements passing over the rollers and onto the surface of the pipe.

4,541,888

TAPING MACHINE FOR VARIABLE-SIZE CARTONS

Augusto Marchetti, Piazza Sicilia, 7, 20146 Milano, Italy

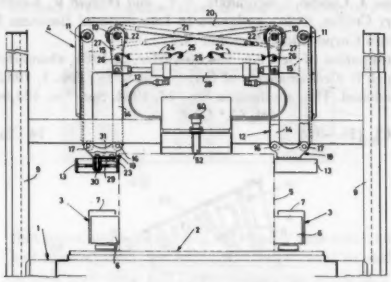
Filed Feb. 4, 1983, Ser. No. 463,668

Claims priority, application Italy, Mar. 16, 1982, 20169 A/82; Jun. 8, 1982, 22122/82[U]

Int. Cl.⁴ B32B *1/00*

U.S. Cl. 156—468 **13 Claims**

1. Taping machine capable of handling different sized cartons, comprising a carton support base, carton advancement means along said support base and a taping head superimposed above said support base and vertically movable with respect to it, characterized in that said taping head pivotally supports at least one pair of support arms for thrust members for engaging the upper edge of carton sides to stress the sides towards each other, there being provided control means to actuate said arms to move them towards the pressure engagement with the carton sides when the carton is passed under said taping head, said



thrust members having a rest position outwardly of said support base.

4,541,889

DUAL-BELT PRESS FOR THE CONTINUOUS PRODUCTION OF LAMINATES

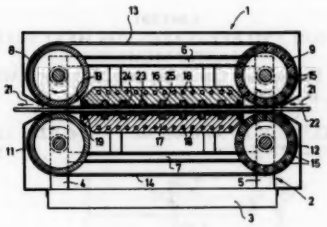
Kurt Held, Alte Strasse 1, 7218 Trossingen 2, Fed. Rep. of Germany

Filed Jul. 10, 1984, Ser. No. 629,400

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1983, 3325578

Int. Cl.⁴ B30B *5/06*

U.S. Cl. 156—583.5 **15 Claims**



1. Dual-belt press for the continuous production of laminates with two heated, rotating endless belts running over rollers, the laminate being guided between the opposite outsides of said belts, with heating plates which, through annularly enclosed seals, contact the insides of the endless belts, and with a fluid, pressure-cushion-forming pressure medium in the spaces formed by the seals, belt insides and heating plates to exert the necessary pressing force on the laminate, wherein the spaces filled with the pressure cushion contain additional heat bridges **(23)** which, in forming a good thermal conduction contact, are, on one side, connected to the heating plates **(16, 17)** and, on the other side, rubbingly contact the belt insides.

4,541,890

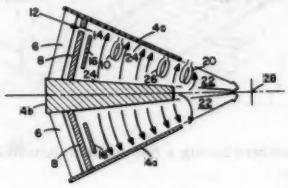
HALL ION GENERATOR FOR WORKING SURFACES WITH A LOW ENERGY HIGH INTENSITY ION BEAM

Jerome J. Cuomo, Lincolndale, N.Y., and Harold R. Kaufman, Fort Collins, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 584,304, Mar. 5, 1984, abandoned, which is a continuation of Ser. No. 383,919, Jun. 1, 1982, abandoned. This application Sep. 24, 1984, Ser. No. 654,045

Int. Cl.[4] **C23C** *15/00*

U.S. Cl. 156—345 **14 Claims**



1. In a system for working the surface of electronic circuit substrates, a low energy, high intensity ion source comprising:

a plasma chamber receiving at one end thereof a gas for ionizing, and open at another end to deliver ions; said chamber including an anode, and an external electron emitting cathode adjacent said open end exterior to said chamber for receiving a voltage potential, whereby a current flow of electrons between said cathode and anode is generated;

a first magnetic pole piece having an interior surface forming an interior circumferential surface of said chamber; and

a second magnetic pole piece extending along a longitudinal axis of said plasma chamber, said pole pieces forming an interior magnetic field for increasing the production of ions within said chamber, said first magnetic pole piece forming an interior angle with said second pole piece, said magnetic pole pieces producing an arcuate fringe field at said open end, said anode and cathode forming an accelerating electrostatic field therebetween along an axis of said plasma chamber to said open end, whereby ions exiting said plasma generator are formed in a predetermined beam pattern determined by said angle as a result of said electrostatic field and magnetic field.

4,541,891

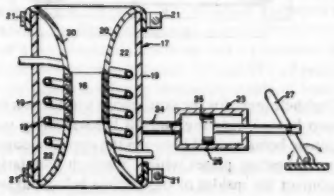
METHOD AND APPARATUS FOR HEAT SEALING PLASTIC MEMBERS

Alfred F. Leatherman, Columbus, Ohio, assignor to William C. Heller, Jr., Milwaukee, Wis.

Filed Sep. 30, 1982, Ser. No. 429,017

Int. Cl.[4] **B32B** *31/00;* **B30B** *5/02, 15/34;* **B23K** *13/02*

U.S. Cl. 156—379.6 **5 Claims**



1. A heat sealing apparatus for providing a smooth and wrinkle-free bond between the adjoining surfaces of two plastic members to form a self-supporting assembly, the combination comprising:

a seamless, tubular elastic heating element encircling the plastic members and positioned about the surfaces to be bonded, said heating element having a bonding position in which said elastic heating element is under tension and having an elastic flexible inner surface engaging and conforming to the external configuration of the plastic members, and a non-bonding position wherein its elastic flexible inner surface is spaced from the plastic members;

said heating element includes a uniform dispersion of particulate material integrally disposed therein capable of generating heat in response to a source of energy and operable with the expansion and contraction of the element;

an induction heating means for raising the temperature of the particulate material to heat said adjoining surfaces to a bonding temperature; and

hydraulic positioning means coupled to the heating element and disposed circumferentially thereabout for moving the heating element between its respective bonding and non-bonding positions whereby in said bonding position the heating element is contracted about said plastic members to establish a bonding pressure thereon and said elastic flexible inner surface totally conforms to the configuration of the plastic members, and in said non-bonding position the heating element is elastically expanded outwardly of said bonding position to permit relative movement of said plastic members with respect to the heating element.

4,541,892

PROCESS FOR THE POSITIONING OF AN INTERCONNECTION LINE ON AN ELECTRICAL CONTACT HOLE OF AN INTEGRATED CIRCUIT

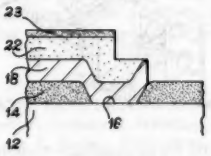
Pierre Jeuch, Seyssins, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Aug. 10, 1984, Ser. No. 639,587

Claims priority, application France, Aug. 12, 1983, 83 13282

Int. Cl.[4] **C23F** *1/02;* **B44C** *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—643 **5 Claims**



1. A process for the positioning of an interconnection line on an electrical contact hole of an integrated circuit, wherein, after producing the electrical contact hole, the following successive stages are performed:

deposition on the complete integrated circuit of a conductive coating, in which the interconnection line will be produced,

deposition on the conductive coating of an insulating coating obliterating the relief thereof and having a planar surface,

deposition of an intermediate coating of non-reflecting material on the insulating coating,

deposition of a photosensitive resin coating on the intermediate coating and production of the image of the interconnection line to be produced in said resin coating,

etching the non-reflecting, mask-free region of the material coating,

elimination of the mask and etching the insulating coating of the regions not protected by the intermediate coating, the etching being stopped as soon as the region of the conductive coating located outside the contact hole is exposed,

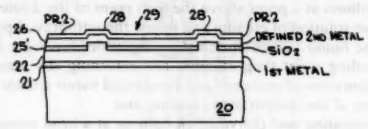
etching that part of the conductive coating free from the insulating coating, and

elimination of the insulating coating and the remaining non-reflecting material.

4,541,893
PROCESS FOR FABRICATING PEDESTAL INTERCONNECTIONS BETWEEN CONDUCTIVE LAYERS IN AN INTEGRATED CIRCUIT

Colin W. T. Knight, Los Altos Hills, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed May 15, 1984, Ser. No. 610,450
Int. Cl.[4] C23F *1/02*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—643 15 Claims



1. A process for fabricating pedestals to interconnect conductive layers in an integrated circuit formed in a semiconductor substrate, comprising the steps of:

forming on a semiconductor substrate a first conductive layer with an overlying stop etch layer in an electrical interconnection pattern, said pattern incorporating wider regions at locations where a pedestal is to be formed;

selectively etching said stop etch layer edgewise with an etch which preferentially etches said stop etch layer in preference to said conductive layer until stop etch caps remain centrally within said widened regions; and

selectively etching said first conductive layer with an etch which selectively etches said conductive layer in preference to said stop etch layer to form pedestals underneath said stop etch caps.

4,541,894
METALLIZABLE, ESSENTIALLY ISOTROPIC POLYMERIC SUBSTRATES WELL ADOPTED FOR PRINTED CIRCUITS

Robert Cassat, Ternay, France, assignor to Rhone-Poulenc SA, Courbevoie, France

Filed May 29, 1984, Ser. No. 614,760
Claims priority, application France, May 27, 1983, 83 09027
Int. Cl.[4] D21F *11/00*
U.S. Cl. 162—138 19 Claims

1. An essentially isotropic metallizable polymeric substrate, comprising a fibrous organic polymer matrix bonded together with a cured imido prepolymer and including particulate filler material distributed therethrough, said substrate having low moisture absorption ranging from 0.03 to 0.5% and a coefficient of thermal expansion, at a temperature ranging from −65° C. to 125° C., which ranges from 3 to 8×10^{-6} cm/cm/°C.

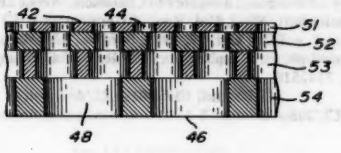
4,541,895
PAPERMAKERS FABRIC OF NONWOVEN LAYERS IN A LAMINATED CONSTRUCTION

Hans Albert, Vienna, Austria, assignor to Scapa Inc., Waycross, Ga.

Filed Oct. 29, 1982, Ser. No. 437,548
Int. Cl.[4] B32B *3/10, 5/02*; D21F *3/02, 7/08*
U.S. Cl. 162—348 13 Claims

1. A papermakers belt comprising:

a plurality of sheets of impervious non-woven material arranged as layers one on top of the other and joined together by lamination to provide a multilayered fabric having a topmost layer, an intermediate layer and a bottommost layer, said sheets being joined together at their ends to form an endless belt, each of said sheets having a plurality of drainage apertures that extend through the respective sheets, wherein each aperture in the layers overlaps at least one aperture in an adjacent layer to define continuous passageways for fluid to pass through said multilayered fabric from said topmost layer to said bottommost layer and being constructed of a material so that the sheet possesses an attribute required by the papermakers belt for its intended use, said drainage apertures formed in the topmost layer of said belt being of a size so

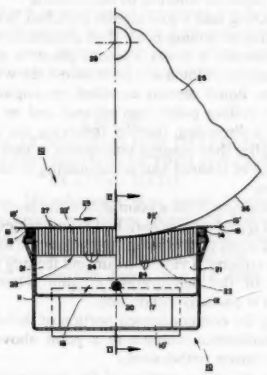


that paper slurry fibers will not readily pass therethrough, and wherein said drainage apertures formed in each successive layer from said topmost layer are larger than those apertures in the previous layer to impart a desired permeability to the fabric.

4,541,896
SUCTION BOX FOR DEHYDRATING PAPER WEBS

Jürgen Banning, Duren, Fed. Rep. of Germany, assignor to O. Dorries GmbH, Duren, Fed. Rep. of Germany

Filed Feb. 8, 1984, Ser. No. 578,216
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1983, 3305539
Int. Cl.[4] D21F *1/50*
U.S. Cl. 162—363 12 Claims



1. A suction box in combination with a dandy roll for dehydrating paper webs and including deckle slides elastically yieldable to the peripheral face of said dandy roll, characterized in that each said deckle slide comprises a lamella package having its longitudinal axis disposed in the direction of web travel, each said lamella package including a plurality of parallel rigid lamellae shiftable relative to one another in respective planes substantially perpendicular to the direction of web travel.

4,541,897

DISTILLATION PROCESS FOR THE PRODUCTION OF DEHYDRATED ETHANOL

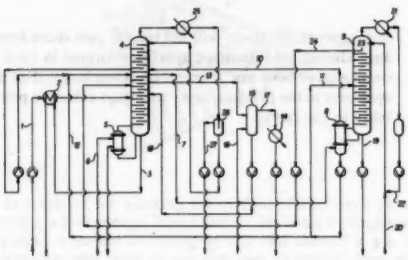
August Sommer, Herne; Rainer Brücker, Castrop-Rauxel; Wilhelm Heitmann, Herne, and Norbert Wozny, Marl, all of Fed. Rep. of Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Oct. 27, 1982, Ser. No. 436,945

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1981, 3142518

Int. Cl.[4] B01D *3/34*

U.S. Cl. 203—19 25 Claims



1. A distillation process for the production of dehydrated ethanol from a dilute aqueous solution of ethanol comprising:

(a) providing a distillation system having a rectification column and a dehydration column;

(b) feeding an impure dilute aqueous solution of ethanol to the rectification column, said dilute aqueous solution having been preheated by indirect heat exchange with the sump product withdrawn from said rectification column;

(c) operating said rectification column at a sump pressure of 2–8 bars and producing an overhead vapor containing 75-95% by wt. of ethanol;

(d) withdrawing from the rectification column a liquid stream enriched in impurities having a higher boiling point than ethanol from a point above the feed point of the dilute aqueous solution to the column;

(e) subjecting said liquid stream enriched in impurities having a higher boiling point than ethanol to a phase seperation wherein a lower aqueous phase is returned to the rectification column at a point below the withdrawal point for the liquid stream enriched in impurities having a higher boiling point than ethanol and an upper organic phase is discarded, thereby removing the impurities boiling higher than ethanol introduced in said dilute aqueous solution of ethanol and accumulating in said rectification column;

(f) withdrawing from a point above the point of withdrawal of said liquid stream enriched in impurities having higher boiling point than ethanol, and below the top of the rectification column, a vapor stream and feeding the same to the boiler of the dehydration column wherein the vapor stream is partially condensed,

returning the non-condensed portion of the vapor stream to the rectification column at a point above the point of vapor stream withdrawal,

returning at least a portion of the condensed vapor to the rectification column at the point of vapor stream withdrawal, and at least a portion of the condensed vapor to the upper portion of the dehydration column;

(g) withdrawing from the top of the rectification column, a vapor stream enriched in ethanol and containing an entrainer and impurities having a lower boiling point than ethanol, totally condensing said vapor stream enriched in ethanol and withdrawing a portion of an organic phase so-produced while recycling the remaining condensed phase to the top of the rectification column;

(h) withdrawing a vapor stream from the top of said dehydration column, totally condensing said vapor stream, admixing an entrainer selected from the group consisting of a gasoline fraction, cyclohexane, benzene and n-hexane with said condensed vapor stream,

separating said admixture into an aqueous phase and an organic phase,

withdrawing a portion of said aqueous phase in an amount to balance the water input and output of the dehydration column and

feeding said portion of said aqueous phase to the rectification column at a point above the feed point of the dilute aqueous solution of ethanol and below the withdrawal point of the liquid stream enriched in impurities having a higher boiling point than ethanol, and returning the remaining admixture of entrainer and condensed vapor stream to the top of the dehydration column; and

(i) operating said dehydration column at a head pressure of 0.5–2 bar and withdrawing a sump product from said dehydration column comprising ethanol containing less than 0.1% by wt. water, based on ethanol.

4,541,898

METHOD FOR HEATING

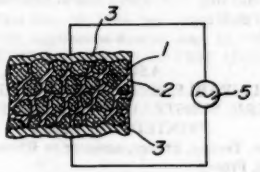
Syunzo Mase, Aichi, and Shigeo Soejima, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Japan

Filed May 20, 1982, Ser. No. 380,281

Claims priority, application Japan, May 25, 1981, 56-77920

Int. Cl.[4] G01N *27/46;* H05B *3/10*

U.S. Cl. 204—1 T 5 Claims



1. A method of heating an element comprising an electric resistor which comprises a plurality of thin films having a negative temperature coefficient of electric resistance and highly resistant region layers interposed between said thin films and at least two separate electrodes arranged in contact with different layers of the resistor, such that the plurality of thin films is located between said at least two separate electrodes, comprising the steps of:

applying an AC current across at least two of said separate electrodes with a frequency which is sufficiently high that an impedance between said electrodes to which AC voltage is applied is largely independent of interface capacitances between said electrodes to which AC voltage is applied and a surface where said electrodes contact said resistor, thereby heating the element.

4,541,899

METHOD OF HEATING A SOLID ELECTROLYTE BODY

Syunzo Mase, Ama, and Shigeo Soejima, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Japan

Continuation-in-part of Ser. No. 210,239, Nov. 25, 1980, Pat. No. 4,407,704. This application May 21, 1982, Ser. No. 380,835

Claims priority, application Japan, Dec. 4, 1979, 54-156314; Mar. 28, 1980, 55-39004

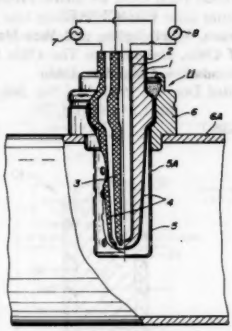
The portion of the term of this patent subsequent to Oct. 4, 2000, has been disclaimed.

Int. Cl.[4] G01N *27/46;* H05B *3/10*

U.S. Cl. 204—1 T 5 Claims

1. A method of heating a solid electrolyte body comprising the steps of:

providing a heating element having two separate electrodes contacting the solid electrolyte body, such that said solid electrolyte body is located between said two separate electrodes; and



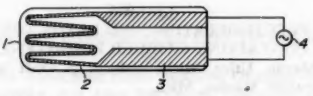
applying an AC current across said two separate electrodes with a frequency sufficiently high such that an impedance between said electrodes is largely independent of interface capacitances between said electrodes and a surface where said electrodes contact said solid electrolyte body.

4,541,900

METHOD FOR HEATING SOLID ELECTROLYTE

Syunzo Mase, Aichi, and Shigeo Soejima, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Dec. 6, 1982, Ser. No. 447,174
Claims priority, application Japan, Oct. 8, 1982, 57-177047
Int. Cl.[4] G01N *27/46*; H05B *3/10*
U.S. Cl. 204—1 T **6 Claims**



1. A method of heating a solid electrolyte which is ion-conductive at temperatures above room temperature, comprising:

providing an electric resistance heating element in contacting engagement with a solid electrolyte wherein heat generated by said electric resistance heating element causes a temperature of the solid electrolyte to rise above room temperature, thereby reducing an electrical resistance of said electrolyte and permitting said electrolyte to become ion-conductive; and

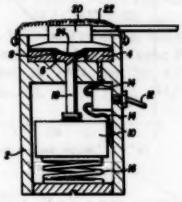
applying an alternating current from an AC power source connected to opposite ends of the electric resistance heating element so as to flow an alternating current to the electric resistance heating element, wherein said alternating current from the AC power source has a frequency of about 1 kHz to about 100 kHz such that an interface impedance between said solid electrolyte and said electric resistance heating element to which said AC source is connected is largely independent of an interface capacitance between said solid electrolyte and said electric resistance heating element, whereby heat is generated in the electric resistance heating element by flowing the alternating current therethrough and heat is also generated in the solid electrolyte by flowing an alternating current directly through the solid electrolyte, a heating of the solid electrolyte being dependent upon a temperature-sensitive resistance of the solid electrolyte being heated by the electric resistance heating element.

4,541,901

METHOD AND APPARATUS FOR ZERO CALIBRATION OF OXYGEN-SENSING POLAROGRAPHIC DEVICES

Dawood Parker, and David T. Delpy, both of London, England, assignors to Novametrix Medical Systems, Inc., Wallingford, Conn.

Filed Apr. 25, 1984, Ser. No. 603,718
Claims priority, application United Kingdom, Apr. 27, 1983, 8311541
Int. Cl.[4] G01N *27/46*
U.S. Cl. 204—1 T **7 Claims**



5. A method of calibrating a polarographic oxygen sensor with sensing electrodes disposed on one side of an oxygen permeable barrier, which has a sensing surface of predetermined contour on an opposite side of said barrier, at substantially zero concentration of oxygen, comprising

mounting said sensor in closely spaced relationship to a surface with a contour which is in complementary conformity with the contour of said sensing surface and upon which there is a layer of an electrolyte

applying a voltage across an anode and a cathode in contact with said electrolyte at a sufficient magnitude to cause reduction of the oxygen therein at a rate greater than the absorbtion of ambient oxygen into said electrolyte, and

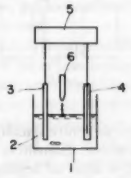
scaling an oxygen measurement apparatus responsive to the output of said sensor to indicate zero concentration and dismounting said sensor from its position adjacent the surface carrying the layer of electrolyte.

4,541,902

ANALYTICAL METHOD FOR DETERMINING FORMALDEHYDE IN ELECTROLESS COPPER PLATING BATH

Akemi Kinoshita, Higashiosaka; Ken Araki, Ibaragi; Hidemi Nawafune, Takatsuki, and Shozo Mizumoto, Takarazuka, all of Japan, assignors to C. Uyemura & Co., Ltd., Osaka, Japan

Filed Nov. 7, 1984, Ser. No. 668,956
Claims priority, application Japan, Nov. 11, 1983, 58-212066
Int. Cl.[4] G01N *27/46*
U.S. Cl. 204—1 T **10 Claims**



1. An analytical method for determining by potentiometric titration formaldehyde in an electroless copper plating bath,

which comprises using a hydroxylamine salt as the titrant and using a silver electrode as the indicator electrode.

4,541,903

PROCESS FOR PREPARING ZN-FE BASE ALLOY ELECTROPLATED STEEL STRIPS

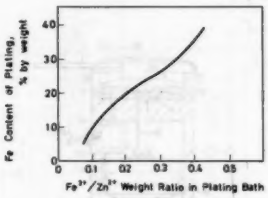
Kazuaki Kyono; Shigeo Kurokawa; Hajime Kimura; Toshio Irie; Takahisa Yoshihara, and Akira Matsuda, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Oct. 30, 1984, Ser. No. 666,313

Claims priority, application Japan, Dec. 3, 1983, 58-228666

Int. Cl.⁴ C25D *3/56, 7/00*

U.S. Cl. 204—28 **21 Claims**



1. A process for preparing a Zn-Fe base alloy electroplated steel strip by electroplating a steel strip with a Zn-Fe base alloy containing 10 to 30% by weight of iron to form a Zn-Fe base alloy plating having improved surface properties, characterized in that the electroplating is conducted in a chloride bath which contains zinc and ferrous ions in a total concentration of from 1.0 mol/l to the solubility limit with a weight ratio of Fe^{2+}/Zn^{2+} between 0.10 and 0.35, and chloride ions in a total concentration of at least 6.0 mol/l under electrolytic conditions: pH between 1.0 and 6.0, a current density between 80 and 200 A/dm^2, and a relative flow velocity between 30 and 200 m/min.

4,541,904

METHOD OF MANUFACTURING A MOISTURE SENSOR

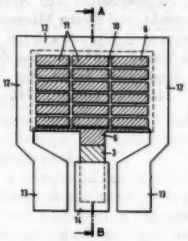
Ernst Lüder, Stuttgart, and Traugott Kallfass, Grossbottwar, both of Fed. Rep. of Germany, assignors to Endress U. Hauser GmbH U. Co., Fed. Rep. of Germany

Division of Ser. No. 272,065, Jun. 9, 1981, Pat. No. 4,433,319. This application Nov. 9, 1983, Ser. No. 578,715

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1980, 3024297

Int. Cl.⁴ C23C *15/00*

U.S. Cl. 204—38.3 **40 Claims**



1. A method making a moisture sensor, said method comprising applying on a moisture insensitive substrate by cathode sputtering of tantalum, a layer of highly resistive low density tantalum having a density of less than 15 g/cm^3, converting the tantalum layer at least over a portion of its thickness by oxidation to a tantalum oxide layer, and placing at least two electrodes on the tantalum oxide layer spaced apart from each other.

4,541,905

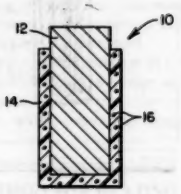
ELECTRODES FOR USE IN ELECTROCATALYTIC PROCESSES

Theodore Kuwana, Worthington, and Wen-Hong Kao, Columbus, both of Ohio, assignors to The Ohio State University Research Foundation, Columbus, Ohio

Filed Dec. 13, 1983, Ser. No. 560,832

Int. Cl.⁴ C25D *5/00*

U.S. Cl. 204—38.7 **13 Claims**



1. A method for producing an electrode, said method comprising:

immersing a base member formed of conductive material and having at least part of its surface covered with a layer of porous, polymeric material, said porous, polymeric material not itself being capable of effecting reduction or oxidation, in a solution of a metal compound capable of being electrolyzed to deposit said metal; and

while said base member is still immersed in said solution, passing current through said base member and said solution, thereby causing electrolysis of said metal salt and deposition of a plurality of discrete particles of said metal dispersed in said layer.

4,541,906

ZINC ELECTROPLATING AND BATHS THEREFORE CONTAINING CARRIER BRIGHTENERS

Sylvia Martin, Utica, Mich., assignor to OMI International Corporation, Warren, Mich.

Filed May 21, 1984, Ser. No. 611,114

Int. Cl.⁴ C25D *3/22*

U.S. Cl. 204—55 R **19 Claims**

1. An aqueous acidic zinc electrolyte containing zinc ions in an amount effective to electrodeposit zinc, hydrogen ions to provide a pH on the acid side, and a brightening amount of a carrier brightener which is a bath soluble anionic sulfated polyoxyalkylene surfactant derived from the sulfation of:

the alkoxylation of mono and polyhydroxy compounds having radicals selected from the group consisting of hydroxyl containing alkyl, alkenyl, alkynyl, aryl, and carboxylic derivatives thereof as well as mixtures thereof.

4,541,907

PROCESS FOR DECOMPOSING CHLORINATED HYDROCARBON COMPOUNDS

Charles J. Cullelton, Tarentum; Alfred F. LaCamera, Level Green, and Thomas J. Robare, New Kensington, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Apr. 16, 1984, Ser. No. 601,064

Int. Cl.⁴ C01F *7/60;* **C25C** *3/06*

U.S. Cl. 204—67 **11 Claims**

1. A process for production of aluminum wherein chlorine contaminated with chlorinated hydrocarbons is formed as a by-product, said process comprising

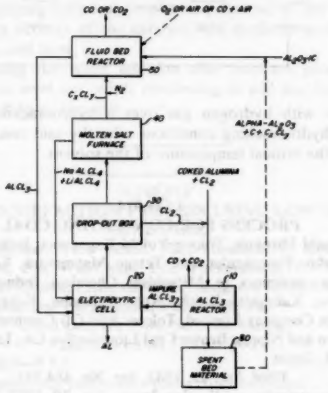
(a) electrolyzing in a molten salt bath and at an elevated

temperature aluminum chloride contaminated with chlorinated hydrocarbons, thereby to form

(1) aluminum, and

(2) chlorine gas contaminated with a mixture of chlorinated hydrocarbons comprising principally hexachlorobenzene,

(b) collecting said mixture together with salts from the bath and separately from the chlorine gas,



(c) separating the salts from the mixture by dissolving said salts in a molten $NaAlCl_4$ bath,

(d) heating the mixture to an elevated temperature of about 800° to 1200° C., and

(e) reacting the mixture with alumina and a reactive carbon source at said elevated temperature said reactive carbon source being selected from the group consisting of activated carbon, coked alumina and mixtures thereof, thereby to form aluminum chloride and other products.

4,541,908

HEME PROTEIN IMMOBILIZED ELECTRODE AND ITS USE

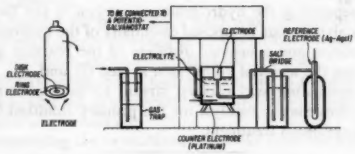
Katsumi Niki, Yokohama; Hiroo Inokuchi, Okazaki; Tatsuhiko Yagi, Shizuoka, and Asao Nakamura, Tokyo, all of Japan, assignors to Ajinomoto Company Incorporated, Tokyo, Japan

Continuation-in-part of Ser. No. 562,030, Dec. 15, 1983, , which is a continuation-in-part of Ser. No. 385,315, Jun. 4, 1982, abandoned. This application Aug. 31, 1984, Ser. No. 646,072

Claims priority, application Japan, Jun. 12, 1981, 56-89615

Int. Cl.[3] C25B *1/02, 11/04*

U.S. Cl. 204—101 **17 Claims**



2. A method of catalytic four-electron reduction of dioxygen directly to water in an aqueous solution which comprises placing an oxygen electrode comprising a solid electrical conducting material on the surface of which cytochrome c_3 is immobilized in an amount ranging between 20% and 100% of monolayer coverage into a first aqueous electrolyte solution at a pH of from about 4 to 10, placing a second electrode into a second aqueous electrolyte solution, said second electrolyte solution and second electrode being in communication with said first electrolyte solution and said first electrode in a manner to complete an electrical circuit, and

applying an electrical current to said circuit sufficient to cause reduction of oxygen to water at the first electrode.

3. The method as claimed in claim 2 in which said oxygen electrode is a carbon electrode on the surface of which cytochrome c_3 is immobilized in an amount ranging from 40% to 70% of monolayer coverage, said cytochrome c_3 being isolated from a microorganism of the genus Desulfovibrio which is capable of producing cytochrome c_3.

4,541,909

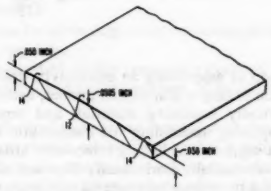
CONTROLLED METAL REMOVAL BY PARALLEL-TO-FACE ELECTROCHEMICAL MACHINING

Robert E. Fromson, Wilkins Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 20, 1984, Ser. No. 632,977

Int. Cl.[4] B23P *1/02, 1/12*

U.S. Cl. 204—129.2 **6 Claims**



1. An electrochemical machining process for removing high spots from the surface of reactive metal workpiece, said process comprising:

a. measuring said workpiece to determine the position of a high spot and the amount of material to be removed;

b. positioning a wedge-shaped, zero-angle electrochemical machining tool in line with the center of the high spot; and

c. moving said tool parallel to the workpiece surface across said high spot at a product of current times inverse of speed essentially proportional to the amount of material to be removed.

4,541,910

METHOD FOR ELECTROBLOTTING MACROMOLECULES FROM A CHROMATOGRAPHIC GEL

Fred E. Davis, III, Hamden, Conn., and Johathan M. Gershoni, Rehovot, Israel, assignors to Yale University, New Haven, Conn.

Filed Nov. 7, 1983, Ser. No. 549,474

Int. Cl.[4] G01N *27/26, 27/28*

U.S. Cl. 204—182.8 **4 Claims**

1. An improved method of electroblotting macromolecules from a chromatographic gel to an immobilizing matrix wherein the improvement comprises:

(a) measuring the electric field produced by two or more sets of electrodes, each set of electrodes comprising an anode and a cathode which are located in the same saggital plane within the container, whose electric potential can be varied and adjusted independent from other said sets of electrodes and which said sets of electrodes are equispaced from other said sets of electrodes; and (b) exposing a chromatographic gel and immobilizing matrix placed in a non-conductive container containing a buffer to the measured electrical field.

4,541,911

METHOD OF ASSEMBLING A FILTER PRESS TYPE ELECTROLYTIC CELL

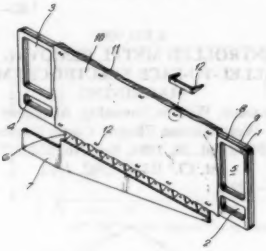
Paul E. A. Burgess, Crowton, and Colin Brereton, Middlewich, both of England, assignors to Imperial Chemical Industries plc, London, England

Filed Jul. 6, 1984, Ser. No. 628,566

Claims priority, application United Kingdom, Jul. 19, 1983, 8319492

Int. Cl.⁴ C25B *9/02, 15/00*

U.S. Cl. 204—253 **14 Claims**



1. A method of assembling an electrolytic cell of the filter press type comprising a plurality of anodes, cathodes, gaskets of an electrically insulating material, and separators, said method comprising assembling the electrolytic cell on a jig comprising a support unit having removably affixed thereto a plurality of substantially horizontally disposed support members positioned to at least one side of said unit, wherein said step of assembling the electrolytic cells on the jig includes the steps of vertically positioning the anodes, cathodes and gaskets on said horizontally disposed support members with a separator positioned between an adjacent anode and cathode, removing the support unit, and compressing the thus formed assembly of anodes, cathodes, gaskets and separators on the horizontally disposed support members to form the electrolytic cell.

4,541,912

CERMET ELECTRODE ASSEMBLY

Duane R. Secrist, Elizabethton; James M. Clark, Johnson City, both of Tenn., and Thomas E. Landon, Simpsonville, S.C., assignors to Great Lakes Carbon Corporation, New York, N.Y.

Filed Dec. 12, 1983, Ser. No. 560,456

Int. Cl.⁴ C25B *11/02, 11/04;* **C04B** *35/00;* **B29F** *5/00*

U.S. Cl. 204—290 R **6 Claims**

1. A cermet electrode assembly for use in an electrolytic cell produced by the process comprising cold isostatic molding a layer of cermet material to be exposed to the bath of the electrolytic cell onto a portion of a metal current conducting member followed by hot isostatic pressing the molded assembly in an essentially oxygen-free atmosphere at a temperature and pressure sufficient to sinter said cermet material and to bond said cermet material to said current conducting member.

4,541,913

PROCESS FOR HYDROCRACKING SUPERCRITICAL GAS EXTRACTS OF CARBONACEOUS MATERIAL

Donald B. Urquhart, Cheltenham, and Stephen A. Moore, Evesham, both of England, assignors to Coal Industry (Patents) Limited, London, England

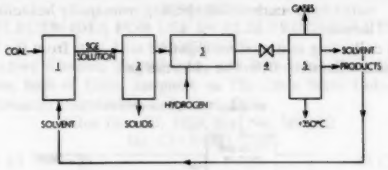
Filed Oct. 8, 1982, Ser. No. 433,519

Claims priority, application United Kingdom, Oct. 16, 1981, 8131227

Int. Cl.⁴ C10G *1/08*

U.S. Cl. 208—8 LE **12 Claims**

1. A process for hydrocracking supercritical gas extract from carbonaceous material consisting essentially of contacting carbonaceous material with a solvent at supercritical conditions to form a supercritical extract, passing said extract and



solvent with hydrogen gas over a hydrocracking catalyst under hydrocracking conditions whereby said conditions are above the critical temperature of the solvent.

4,541,914

PROCESS FOR CONVERTING COAL

Nobuyoshi Hirokoh, Tokyo; Yoichi Kageyama, Isehara; Yukio Nakako, Takarazuka, and Tetsuo Matsumura, Kobe, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo; Kabushiki Kaisha Kobe Seikosho, Kobe; Idemitsu Kosan Company Limited, Tokyo; Asia Oil Company Limited, Tokyo and Nippon Brown Coal Liquefaction Co., Ltd., Tokyo, all of, Japan

Filed Apr. 12, 1983, Ser. No. 484,311

Claims priority, application Japan, Apr. 19, 1982, 57-64973

Int. Cl.⁴ C10G *1/08*

U.S. Cl. 208—10 **7 Claims**

1. A process for preparing light oil from coal by two step hydrogenation, which comprises:

(a) forming a slurry composed essentially of coal, a hydrocarbon solvent and a hydrogenation catalyst which is the catalyst stream from step (h) below:

(b) subjecting the slurry to a primary fluidized-bed hydrogenation treatment to obtain a liquefied product;

(c) withdrawing the liquefied product together with the hydrogenation catalyst from the primary hydrogenation treatment step;

(d) subsequently, separating the ash content and the hydrogenation catalyst from the liquefied product;

(e) subjecting at least a portion of the liquefied product to a secondary fluidized-bed hydrogenation treatment to convert the liquefied product to light oil while feeding fresh hydrogenation catalyst to the secondary hydrogenation treatment step, said fresh catalyst being a fine powder of a hematite or limonite type iron ore having a particle size of at most 40 μm;

(f) withdrawing the reaction product of the secondary hydrogenation treatment together with the hydrogenation catalyst;

(g) separating the hydrogenation catalyst in the form of a catalyst stream composed essentially of the hydrogenation catalyst and a heavier distillate of the reaction product from the material withdrawn in step (f); and

(h) circulating said catalyst stream to step a) to provide hydrogenation catalyst for the primary fluidized-bed hydrogenation treatment.

4,541,915

CATALYTIC REFORMING PROCESS

William C. Baird, Jr., and Charles H. Mauldin, both of Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Oct. 1, 1984, Ser. No. 656,714

Int. Cl.⁴ C10G *35/04, 35/09, 35/22*

U.S. Cl. 208—65 **18 Claims**

1. In a process for improving the octane quality of a naphtha in a reforming unit comprised of one or a plurality of serially

connected reactors which contain a halogenated rhenium-containing catalyst, hydrogen is introduced into the unit, the unit is brought on stream by introducing said naphtha into the unit, and the unit brought to reforming conditions to initiate start-up of the unit

the improvement comprising

adding water during the start-up period, while the hydrogen and naphtha are concurrently added to the unit, in concentration ranging from about 100 vppm to about 10,000 vppm of hydrogen, sufficient to produce decline of the hydrocracking activity of the catalyst, and methane production decline, and then

discontinuing the water addition after methane production begins to level out, while continuing to add dry hydrogen and naphtha to the unit.

4,541,916

COAL LIQUEFACTION PROCESS USING LOW GRADE CRUDE OIL

Harold Beuther, Vero Beach, Fla.; Thaddeus P. Kobylinski, Prospect, Pa.; Win-Chung Lee, Parkersburg, W. Va., and Bruce K. Schmid, Littleton, Colo., assignors to Gulf Research & Development Corporation, Pittsburgh, Pa.

Filed Oct. 18, 1984, Ser. No. 662,357

Int. Cl.[4] C10G *1/00, 47/00*

U.S. Cl. 208—8 LE **11 Claims**

1. A continuous process for converting solid coal to gaseous and liquid hydrocarbonaceous products comprising:

admixing particulate solid coal, coal derived process solvent, coal derived recycle slurry, and a non-coal derived hydrogen donor solvent consisting essentially of a hydrocarbonaceous oil intrinsically containing greater than about 300 ppm of vanadium plus nickel contaminants, and at least 50% of residuum boiling over 600° F., the admixture having a non-coal derived solvent/coal weight ratio of about 1/1 or less; and

reacting said admixture in the absence of an external catalyst source, under hydrogen pressure ranging from about 500 to about 4000 psi and elevated temperature from about 300° C. to about 500° C. for a period of time sufficient to convert a portion of the solid coal to gaseous and liquid hydrocarbonaceous products.

4,541,917

MODIFIED DEOILING-DEWAXING PROCESS

Theodore H. West, Sarnia, Canada, assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Dec. 19, 1983, Ser. No. 562,698

Int. Cl.[4] C10G *73/04*

U.S. Cl. 208—31 **16 Claims**

1. A method for producing a hard wax product of low oil content and a deeply dewaxed oil product from a waxy hydrocarbon oil which method comprises the steps of:

(a) dewaxing the wavy hydrocarbon oil, in the absence of dewaxing aid, at a temperature sufficient to crystallize the hard wax in said oil;

(b) separating the crystallized hard wax from the hydrocarbon oil to yield a hard wax and an oil filtrate;

(c) injecting a dewaxing aid and solvent into said recovered filtrate and chilling said dewaxing aid/filtrate/solvent mixture to a temperature sufficient to crystallize the low melting point wax;

(d) separating the low melting point wax from the deeply dewaxed solvent/oil to yield a low melting point wax product and a solvent/deeply dewaxed oil filtrate; and

(e) separating the solvent/deeply dewaxed oil filtrate into a solvent stream and a deeply dewaxed oil stream.

4,541,918

DEARSENATING OF SHALE OIL WITH POLYACRYLAMIDES

Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 15, 1984, Ser. No. 671,648

Int. Cl.[4] C10G *21/06, 21/00*

U.S. Cl. 208—87 **21 Claims**

1. A process for removing at least a portion of arsenic impurities from a hydrocarbon-containing feed stream, which contains arsenic compounds, comprising the step (a) of contacting said feed stream with an aqueous extractant, which contains at least one substantially dissolved polyacrylamide, under suitable dearsenating conditions so as to produce a hydrocarbon-containing stream having a reduced level of arsenic.

4,541,919

SHAPE SELECTIVE DEWAXING USING COKE MODIFIED LARGE PORE ZEOLITES

Rene B. LaPierre, Medford, and Randall D. Partridge, Princeton, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 7, 1984, Ser. No. 638,608

Int. Cl.[4] C10G *47/20*

U.S. Cl. 208—111 **14 Claims**

1. A process for dewaxing a wax containing hydrocarbon oil feedstock comprising

providing a coked zeolite containing catalyst,

wherein said coked zeolite contains 10 to 60 weight percent coke,

wherein the zeolite, prior to being coked, has a constraint index less than 1, wherein the zeolite is subjected to coking with a coke precursor at coking conditions including a neutral or reducing atmosphere where the hydrogen partial pressure of said reducing atmosphere is less than about 20 atmospheres absolute, to effect relatively uniform coke distribution to restrict the pore size of the zeolite without plugging up the external surface and without unacceptably decreasing the surface area thereof and

contacting said feedstock with said catalyst in the presence of hydrogen at hydrodewaxing conditions to selectively dewax said feedstock.

4,541,920

COMPOSITION AND REFORMING PROCESS FOR THE OPERATION OF A MAGNETICALLY STABILIZED FLUIDIZED BED

Robert L. Seiver, Baton Rouge, La., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 421,046, Sep. 22, 1982, Pat. No. 4,394,282, which is a continuation-in-part of Ser. No. 218,088, Dec. 19, 1980, Pat. No. 4,368,132, which is a continuation-in-part of Ser. No. 943,552, Sep. 18, 1978, abandoned. This application Apr. 18, 1983, Ser. No. 485,638

Int. Cl.[4] C10G *35/085, 45/62*

U.S. Cl. 208—138 **8 Claims**

1. A process for conducting a reforming reaction via fluid-solids contacting wherein a particulate material which can be oriented within, and formed into a magnetically stabilized fluidized bed to provide an effective demagnetization coefficient of from about 0.0027 to about 0.174, which comprises contacting the fluid with a bed of particles comprising particles containing a non-ferromagnetic refractory, porous inorganic oxide component composited with a single elongated ferromagnetic component, the ferromagnetic component being multidomain, having dimensions of at least 1 μm in all directions and a length:diameter (L/D) ratio of at least 2 but not more than 17.3, said ferromagnetic component being present in the composite particles as inclusions within a nonferromagnetic matrix constituting at least 0.5%, but not more than $3/2(L/D)^2$ of the total volume of each particle, where the L/D ratio is the ratio of the longest dimesion of the ferromagnetic

component relative to the shortest dimension, and the particles can, in said magnetically stabilized fluidized bed rotate, or turn to line up the long dimension of a ferromagnetic component parallel to the direction of the field and a short dimension perpendicular to the direction of the field, and wherein a catalytically effective amount of a metal selected from the group consisting of ruthenium, rhodium, palladium, osmium, iridium, and platinum, based on the weight of the catalyst composition, is dispersed on the surface of the composite particle, and the composite particle is catalytically active for conducting the reforming reaction.

4,541,921

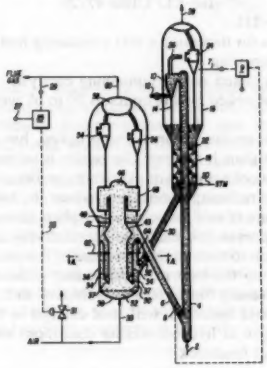
METHOD AND APPARATUS FOR REGENERATING CRACKING CATALYST

Benjamin Gross, Cherry Hill; James H. Haddad, Princeton Junction, and Madhava Malladi, West Deptford, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 348,484, Feb. 12, 1982, Pat. No. 4,448,753. This application Jan. 5, 1984, Ser. No. 568,324

Int. Cl.[4] C10G *35/14*

U.S. Cl. 208—164 **12 Claims**



1. A fluid catalytic cracking process which takes place in a fluid catalytic cracking apparatus, said apparatus comprising:

a reactor vessel and a regenerator vessel, said reactor vessel comprising a reactor riser means and a separation means for separating products of a catalytic cracking reaction from spent catalyst, said regenerator vessel comprising a bed of spent catalyst, placed substantially in the center of said regenerator vessel, and a bed of regenerated catalyst, placed substantially concentrically about said bed of spent catalyst, a means of recycling at least a portion of said regenerated catalyst from said regenerated catalyst bed to said spent catalyst bed and a regenerating medium inlet conduit cooperating with a regenerating medium distribution means in the lower section of said spent catalyst bed, wherein:

said bed of spent catalyst is substantially completely separated from said bed of regenerated catalyst by a substantially annular wall means;

said bed of spent catalyst further comprises a riser in the upflow section of said bed of spent catalyst; and

said means of recycling at least a portion of said regenerated catalyst from said regenerated catalyst bed to said spent catalyst bed comprises at least one trickle valve means placed in said annular wall means,

said process comprising the steps of:

(i) passing a hydrocarbonaceous feed and catalyst admixed therewith through said reactor riser means, thereby effecting cracking of the hydrocarbonaceous feed at the process temperature under exothermic process conditions and deactivating the catalyst by deposition of carbon-containing material thereon;

(ii) separating the deactivated catalyst from the cracked hydrocarbonaceous feed;

(iii) fluidizing the spent catalyst with a regenerating medium and passing the deactivated catalyst to said regenerator vessel wherein the carbon-containing material is removed from the deactivated catalyst, thereby regenerating and heating the catalyst, recycling a portion of said regenerated catalyst into said spent catalyst bed through said trickle value means; and

(iv) passing the regenerated hot catalyst to said reactor riser.

4,541,922

USE OF LIFT GAS IN AN FCC REACTOR RISER

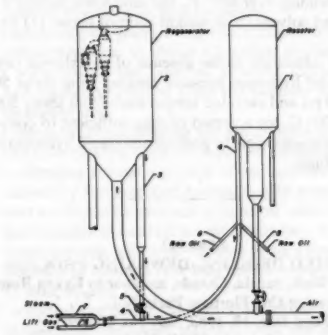
David A. Lomas, Arlington Heights, and Harold U. Hammershaimb, Western Springs, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 584,681, Feb. 29, 1984, Pat. No. 4,479,870. This application Sep. 17, 1984, Ser. No. 651,507

The portion of the term of this patent subsequent to Oct. 30, 2001, has been disclaimed.

Int. Cl.[3] C10G *11/18*

U.S. Cl. 208—164 **5 Claims**



1. A process for converting normally liquid hydrocarbons with an active fluid catalytic cracking catalyst which comprises:

(a) passing a suspension of hot regenerated active fluid catalytic cracking catalyst in a lift gas comprising hydrocarbons including not more than 10 mole % C_3 and heavier hydrocarbons through a horizontally orientated lower portion of a riser conversion zone at a gas velocity of from about 1.8 to less than 12.2 meters per second, and for a catalyst residence time from about 0.5 to about 15 seconds, the weight ratio of catalyst to hydrocarbon in said lift gas being greater than 80; and

(b) introducing said normally liquid hydrocarbons into said upflowing suspension at a vertically orientated locus in said riser conversion zone downstream of said lower portion to form a catalyst-hydrocarbon mixture wherein the temperature and residence time are sufficient to effect the desired conversion.

4,541,923

CATALYST TREATMENT AND FLOW CONDITIONING IN AN FCC REACTOR RISER

David A. Lomas, Arlington Heights, and Harold U. Hammershaimb, Western Springs, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 651,507, Sep. 17, 1984, , which is a continuation-in-part of Ser. No. 584,681, Feb. 29, 1984, Pat. No. 4,479,870. This application Nov. 19, 1984, Ser. No. 672,637
The portion of the term of this patent subsequent to Oct. 30, 2001, has been disclaimed.
Int. Cl.[4] C10G *11/18*
U.S. Cl. 208—164 10 Claims

1. A process for converting a charge stock comprising normally liquid hydrocarbons in a riser conversion zone with an active fluid catalytic cracking catalyst which comprises:

(a) passing suspension consisting essentially of hot regenerated active fluid catalytic cracking catalyst in a lift gas comprising hydrocarbons including not more than 10 mole % C_3 and heavier hydrocarbons (calculated on a water-free basis) through a first treatment section of said riser conversion zone at treatment conditions selected to selectively carbonize reaction sites on the catalyst prior to any contact with the charge stock while simultaneously accelerating the catalyst to a velocity sufficient to provide turbulent dilute flow at the point of contact with the charge stock; and,

(b) introducing said charge stock into said suspension at a locus in said riser conversion zone downstream of said treatment section to form a mixture of catalyst, charge stock and lift gas having the catalyst relatively uniformly distributed therethrough and thereafter reacting the charge stock with the catalyst in the remaining downstream section of said riser conversion zone at reaction conditions sufficient to effect the desired conversion.

4,541,924

COMPOSITION AND HYDROTREATING PROCESS FOR THE OPERATION OF A MAGNETICALLY STABILIZED FLUIDIZED BED

Ronald E. Rosensweig, Summit, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 421,041, Sep. 22, 1982, Pat. No. 4,394,281, which is a continuation-in-part of Ser. No. 218,087, Dec. 19, 1980, Pat. No. 4,368,131, which is a continuation-in-part of Ser. No. 943,384, Sep. 18, 1978, abandoned. This application Apr. 18, 1983, Ser. No. 485,640
Int. Cl.[4] C10G *45/20, 45/62, 47/30, 49/16*
U.S. Cl. 208—216 R 13 Claims

1. A process for conducting hydrotreating reactions via fluid-solids contacting wherein a particulate material is oriented within, and formed into a magnetically stabilized fluidized bed to provide high magnetization at a low applied field which comprises contacting a fluid with a bed comprising particles of geometrically elongate shape which have a major axis at least 1.2 times the length of the minor axis, the particles being of average diameter (minor axis) ranging from about 10 μm to about 4000 μm and contain a nonferromagnetic component, composited with single elongate ferromagnetic components, the ferromagnetic components being multidomain, having dimensions of at least 1 μm in all directions, and having a length:diameter (L/D) ratio of at least 2 but not more than 17.3, the nonferromagnetic component being comprised of alumina within which said ferromagnetic component is dispersed as an inclusion within the interior of the composite particles, the ferromagnetic component constituting at least 0.5%, but not more than $3/2(L/D)^2$, of the total volume of each particle, where the L/D ratio is the ratio of the longest dimension of a ferromagnetic inclusion relative to the shortest dimension, and the particles can, in said magnetically stabilized fluidized bed rotate, or turn to line up the long dimension of the ferromagnetic component parallel to the dimension of the field and a short dimension perpendicular to the direction of the field, and wherein a from about 2 percent to about 25 percent of a metal selected from the group consisting of nickel, cobalt, molybdenum, tungsten, platinum, palladium, ruthenium, rhenium, iridium, and the like, based on the weight of the catalyst composition, is dispersed on the surface of the composite, sufficient that the composite particles are catalytically active for conducting the hydrotreating reactions.

4,541,925

COMPOSITION AND HYDROTREATING PROCESS FOR THE OPERATION OF A MAGNETICALLY STABILIZED FLUIDIZED BED

Robert L. Seiver, and Martin O. Gernand, both of Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 421,040, Sep. 22, 1982, Pat. No. 4,399,047, which is a continuation-in-part of Ser. No. 218,086, Dec. 19, 1980, Pat. No. 4,367,153, which is a continuation-in-part of Ser. No. 943,553, Sep. 18, 1978, abandoned. This application Apr. 18, 1983, Ser. No. 485,639
Int. Cl.[4] C10G *45/20, 45/62, 47/30, 49/16*
U.S. Cl. 208—216 R 3 Claims

1. A process for conducting hydrotreating reactions via fluids-solids contacting wherein a catalytically active particulate material is formed into a magnetically stabilized fluidized bed to provide high magnetization at a low applied field which comprises contacting a bed comprising particles of average size ranging from about 10 μm to about 4000 μm containing a non-ferromagnetic refractory, porous inorganic oxide component composited with a plurality of elongate ferromagnetic components, a ferromagnetic component being multidomain, having dimensions of at least 1 μm in all directions, elongated in one or two directions, and having a length:diameter (L/D) ratio of at least 2 but not more than 19.5 where the ferromagnetic inclusions are elongated in one direction, or an L/D ratio of not more than 313 where ferromagnetic components are elongated in two directions, said ferromagnetic component being present in the composite particles as inclusions within a nonferromagnetic matrix, and randomly oriented and constituting at least 0.5%, but for particles elongated in one direction not more than $2\pi/3(L/D+1)^2$, and for particles elongated in two directions not more than $\pi/2(L/D+1)$, of the total volume of each particle, where L/D is the average ratio of the longest dimension of a ferromagnetic inclusion relative to the shortest dimension, and wherein from about 2 percent to about 25 percent of a metal selected from the group consisting of nickel, cobalt, molybdenum, tungsten, platinum, palladium, ruthenium, rhenium, iridium, and the like, based on the weight of the catalyst composition, is dispersed on the surface of the composite particle, sufficient that the composite particles are catalytically active for conducting the hydroxitating reactions.

4,541,926

PORTABLE WATER CONDITIONER HAVING SEPARATE CONTAINERS FOR DIFFERENT CONDITIONING MATERIALS

Bedford F. Stanley, 1650 S. Arizona Ave., Space #72, Chandler, Ariz. 85224

Filed Jul. 20, 1984, Ser. No. 632,889
Int. Cl.[4] C02F *1/28, 1/42*
U.S. Cl. 210—87 8 Claims

1. A dual container portable water conditioner of the type wherein a consumable conditioning medium is included within a first container and a regenerative medium is included within a second container, said conditioner comprising:

(a) a first container which includes:

i. a first tubular member including a longitudinal axis and having top and bottom ends;

ii. first and second apertured disc members each placed in the top and bottom ends respectively of said member;

iii. diversion means including a plurality of radial members forming arcuate segments therein, said means being contained within said first disc member for diverting fluid passing therethrough into a plurality of flow paths.

iv. support means including a plurality of radial members forming arcuate segments therein, said means being contained beneath said second disc member;

v. a retention screen interposed between the support means and said second disc member;

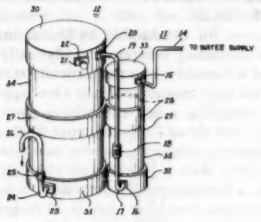
vi. top and bottom closure members each located on the respective end of said first tubular member, each of said closure means having a part therein for the passage of fluid in a direction normal to the axis of the tubular member, at least one of said closure members being removably affixed to said tubular member; and

vii. a first conditioning material contained within said tubular member above said retention screen;

(b) a second container having a larger volume than said first container which includes:

i. a second tubular member including a longitudinal axis and having top and bottom ends;

ii. third and fourth apertured disc members each placed in one of said ends of the second tubular member;



iii. diversion means including a plurality of radial members forming arcuate segments therein, said means being contained within said third disc member for diverting fluid passing therethrough into a plurality of flow paths;

iv. support means including a plurality of radial members forming arcuate segments therein, said means being contained beneath said fourth disc member;

v. a retention screen interposed between the support means and said fourth disc member;

vi. top and bottom closure members each located on the respective end of said second tubular member, each of said closure means having a port therein for the passage of fluid in a direction normal to the axis of the tubular member; and

vii. a second conditioning material contained within said second tubular member above said retention screen;

(c) fluid coupling means interconnecting said first and second containers for the passage of fluid therethrough; and

(d) means for maintaining said first and second containers in adjacently spaced upright position.

4,541,927

ENVIRONMENTAL PROTECTION DREDGING SYSTEM FOR SEPARATING SOLIDS AND LIQUID

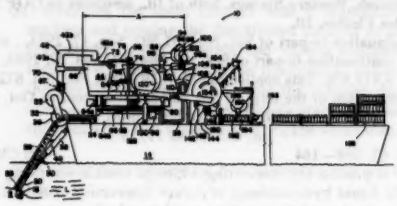
Paul M. Breidenbaugh, 26 N. Montford Ave., Baltimore, Md. 21224

Filed Nov. 29, 1984, Ser. No. 676,107

Int. Cl.[4] B01D *33/00*; E02F *3/88*

U.S. Cl. 210—122 **16 Claims**

1. A unitary dredging system comprising a vessel having thereon: means for continuously lifting spoil, comprising a hydraulic dredge head; a distributor conduit having connection with the hydraulic dredge head, a turntable on the vessel, means for continually centrifugally-separating the spoil lifted into liquid and solid components, comprising a plurality of containers with means rotatably mounting each container about a vertical axis, all said vertical axes equally spaced around the circumference of the turntable, means for imcrementally turning the turntable for positioning each container in turn beneath the distributor conduit, means for successively rotating the containers about said respective axes; means for additionally lifting spoil with said liquid component, comprising means for injecting said separated liquid component upwardly within the hydraulic dredge head; means for drying



said solid component, means for bagging in individual lots said component dried, and means for moving and storing aboard the vessel the individual lots bagged.

4,541,928

TREATING LIQUIDS IN TANKS

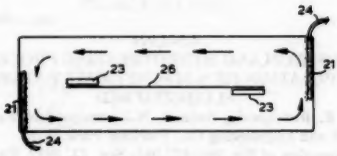
Edward A. Seymour, Marylebone Hall, 35 Marylebone Rd., London N.W. 1, England

Continuation of Ser. No. 525,793, Aug. 23, 1983, abandoned. This application Apr. 30, 1984, Ser. No. 604,605

Claims priority, application United Kingdom, Feb. 24, 1981, 8105692; Jun. 22, 1981, 8109232; Sep. 4, 1981, 8126877

Int. Cl.[4] B03D *1/00*

U.S. Cl. 210—177 **9 Claims**



1. A liquid treatment apparatus comprising a tank having one wall defining with another wall a corner, means to define an operational depth of liquid in the tank which is at most 50% of the effective maximum distance across the tank normal to said one wall, means to provide a bubble curtain in the tank along said one wall adjacent said corner which curtain in use imparts to the liquid an upward vertical component of movement which is asymmetrical along said one wall, causing greater vertical movement of liquid at said corner than at the other end of the wall, the arrangement of said bubble curtain providing mens being such that liquid rising up said one wall which moves away therefrom by reaction therewith will develop a horizontal component of circulation extending away from said one wall at said corner.

4,541,929

DEVICE FOR DRYING OF SOLID MATERIALS

Alois Janusch, Leoben, Austria, assignor to Voest-Alpine Aktiengesellschaft, Vienna, Austria

Filed Jan. 13, 1983, Ser. No. 457,623

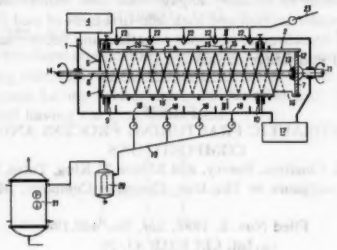
Claims priority, application Austria, Jan. 20, 1982, 191/82

Int. Cl.[4] B01D *33/06*

U.S. Cl. 210—217 **7 Claims**

1. Device for drying of solid materials such as, for example, brown coals containing water, sewage sludges, pulps or the like as well as for leaching organic or inorganic materials, comprising a rotatably supported slot sieve drum horizontally arranged within a tightly closeable and pressure resistant hous-

ing having means defining a charging opening and means defining a discharging opening for the material to be dried arranged on the housing as a lock, the interior of the housing having means defining a plurality of steam supply openings, the sieve drum having slots within its side wall extending from the



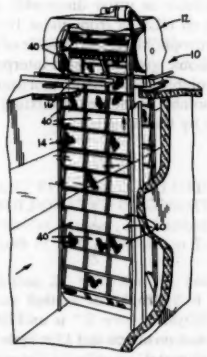
inlet end to the outlet end, and a conveying screw located within the housing and coaxially arranged relative to the drum, the conveying screw and the drum arranged for being rotated around their axes such that solid materials in said drum are not subjected to centrifugal force.

4,541,930

INTERCHANGEABLE SCREEN PANELS FOR A TRAVELING WATER SCREEN

Lester D. Heidler, Harleyville; Richard D. Styer, Coopersburg, and Enos R. Hunsberger, Perkasie, all of Pa., assignors to FMC Corporation, Chicago, Ill.

Filed Apr. 6, 1983, Ser. No. 482,670
Int. Cl.⁴ B01D *33/32*
U.S. Cl. 210—344 **1 Claim**



1. In a screen panel having frame means, a transverse tray carried on said frame means and fabric means carried by said frame means, the improvement comprising; a trough means intersecting said fabric means at a transitional margin, said transitional margin providing a nonabrupt, smooth transition from said fabric means to said trough means, said trough means further having an underbody means shaped to follow the contour of said transverse tray from a rear portion thereof to an outermost termination of said transverse tray, said underbody means preventing the inclusion of material between said trough means and said transverse tray.

4,541,931

LIQUID NEUTRAL ONE PACKAGE COAGULATING AGENTS FOR LACQUERS AND COATING MATERIALS

Juergen Geke, Duesseldorf, and Hans-Joerg Rehm, Hilden, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed May 4, 1984, Ser. No. 607,341
Claims priority, application Fed. Rep. of Germany, May 7, 1983, 3316878
Int. Cl.⁴ C02F *1/56*
U.S. Cl. 210—728 **6 Claims**

1. A one package method of coagulating lacquers and coating material contaminants in water comprising adding a coagulation-effective amount of a coagulating agent comprising an aqueous solution with a pH of about 6 to 9 of (a) at least one inorganic, water soluble, alkaline earth metal salt and (b) at least one water soluble, cationically modified, polyethylene imine or its ammonium salt, said alkaline earth metal salt and imine being present in a mol ratio of about 50–1:1, respectively; wherein the ingredients of said coagulating agent are added to the water to be treated so that said at least one alkaline earth metal salt is added in an amount of about 1 to 50 ppm per operating hour of the coagulating method and so that said at least one imine is added in an amount of about 0.1 to 20 ppm per operating hour of the coagulating method.

4,541,932

HYDROQUINONE CATALYZED OXYGEN SCAVENGER AND METHODS OF USE THEREOF

John A. Muccitelli, Elkins Park, Pa., assignor to Betz Laboratories, Inc., Trevose, Pa.

Filed Nov. 9, 1984, Ser. No. 670,196
Int. Cl.⁴ C23F *11/06, 11/12, 11/14;* C02F *1/58*
U.S. Cl. 210—750 **11 Claims**

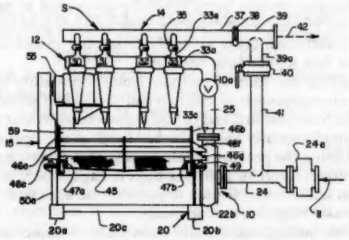
1. A method for reducing the amount of oxygen in an aqueous medium comprising adding to said medium an effective amount for the purpose of a treatment comprising furfural and a catalytic amount of hydroquinone.

4,541,933

PROCESS FOR SEPARATION OF ASH FROM WASTE ACTIVATED SLUDGE

Clark W. Armold, 3711 Cypress Hill Dr., Spring, Tex. 77373; Michael B. Huebner, 3463 Garden Grove, Houston, Tex. 77066, and David Tobin, 1661 Sterling Rd., Charlotte, N.C. 28209

Filed May 14, 1984, Ser. No. 610,132
Int. Cl.⁴ B01D *21/26*
U.S. Cl. 210—780 **10 Claims**



1. Process for the substantial removal of ash from a waste activated sludge stream containing supernatant, ash and carbon as suspended solids comprising the steps of:

receiving an incoming waste activated sludge stream primarily containing supernatant, ash and carbon;

controlling the pressure of said waste activated sludge stream and circulating said waste activated sludge at said controlled pressure to a first separation stage;

in said first separation stage, circulating said controlled pressure waste activated sludge through a plurality of hydrocyclones in parallel flow paths to produce a first fluid output substantially containing supernatant and carbon and a second fluid output containing supernatant, carbon and a substantially greater concentration of ash than said first fluid output;

collecting said first fluid from said hydrocyclones into a first return output for recirculation back into said sewage treatment process;

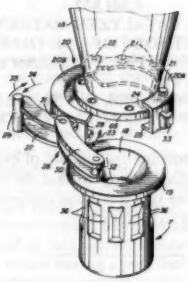
circulating said second fluid output from said first separation stage through a second separation stage to further separate ash from said first stage second fluid output to produce a second stage third fluid output containing substantially supernatant and powdered carbon and a fourth output which is an ash concentrate for ultimate disposal.

4,541,934

QUICK RELEASE CYCLONE APEX SYSTEM

Gordon R. Hakola, 6851 N. Deone La., Tucson, Ariz. 85704

Filed Jul. 19, 1983, Ser. No. 515,282
Int. Cl.[4] B01D *45/12*
U.S. Cl. 210—787 **15 Claims**



1. A method of replacing a worn apex attached to a cone of a cyclone, said method comprising the steps of:

(a) using one hand of an operator for grasping a handle of a quick release locking mechanism that is pivotally attached to a first semicircular section of a split ring clamp, said split ring clamp including a second semicircular section having a first end and a second end, said first semicircular section having a first end and a second end, said second semicircular section being rigidly attached in fixed relation to a flange of a lower portion of said cone, said second end of said first semicircular section being pivotally connected to said second end of said second semicircular section, said quick release mechanism being pivotally connected to said first end of said first semicircular section;

(b) using said one hand to pull said handle outwardly to effectuate disengagement of said first end of said first semicircular section from said first end of said second semicircular section and simultaneously using another hand of the operator for maintaining the position of said apex so that at least a portion of an upper flange of said apex stays in engagement with said second semicircular section to prevent said apex from falling when said ring clamp is opened;

(c) further pulling said handle outwardly to cause said first semicircular section to pivot outwardly from said second semicircular section and said upper flange of said apex;

(d) removing said apex from the vicinity of said cone;

(e) positioning an upper flange of a new apex into a mating engagement with said second semicircular section of said split ring clamp and in alignment with said cone and maintaining it in that position with only one hand of said operator; and

(f) using another hand of said operator to pivot said first semicircular section to a closed position and to grasp said handle and force it inwardly to cause said quick release locking mechanism to securely engage said first end of said first semicircular section and lock said first ends of said first and second semicircular sections together and secure said new apex to said flange of said cone.

4,541,935

HYDRAULIC FRACTURING PROCESS AND COMPOSITIONS

Vernon G. Constien, Sperry, and Milton T. King, Tulsa, both of Okla., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 8, 1982, Ser. No. 440,198
Int. Cl.[4] E21B *43/26*
U.S. Cl. 252—8.55 R **11 Claims**

1. In the process of fracturing a subterranean formation penetrated by a wellbore by injecting a hydraulic fracturing fluid through said wellbore and against said subterranean formation at a flow rate and pressure at least sufficient to initiate and/or extend a fracture into said formation, the improvement comprising using as said hydraulic fracturing fluid an aqueous composition having chemical and physical properties sufficient to render it useful as a hydraulic fracturing fluid at 275° F., said composition comprising:

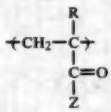
A. an aqueous medium; and

B. a thickener composition in an amount sufficient to increase the viscosity of said aqueous medium, said thickener composition comprising:

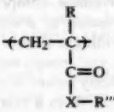
(1) a water soluble or water dispersible interpolymer having pendant hydrophobic groups chemically bonded thereto and containing, in interpolymerized form, from about 99.0 to about 99.4 mole percent of a water soluble monomer or mixture of such monomers and from about 1.0 to about 0.6 mole percent of a water insoluble monomer or mixture of such monomers,

(2) a water soluble or water dispersible nonionic surfactant having an HLB of from about 10 to about 14 and having a hydrophobic group capable of associating with the hydrophobic groups on said interpolymer, and

(3) a water soluble monovalent inorganic salt, wherein said water soluble monomer or mixture of monomers is represented by the formula:



wherein R is hydrogen or methyl and Z is NH_2 or NH—R″—SO_3M, where R″ is an alkylene group of from 1 to 4 carbon atoms and M is hydrogen, an ammonium or alkali metal ion and said water insoluble monomer or mixture of monomers is represented by the formula:



wherein X is —O— and R‴ is an alkyl group of from about 8 to about 24 carbon atoms.

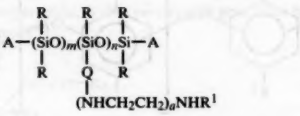
4,541,936

METHOD AND SILOXANE COMPOSITION FOR TREATING FIBERS

Isao Ona, and Masaru Ozaki, both of Chiba, Japan, assignors to Toray Silicone Company, Ltd., Tokyo, Japan

Filed Aug. 20, 1984, Ser. No. 642,467
Claims priority, application Japan, Sep. 16, 1983, 58-170779
Int. Cl.[4] D06M *13/02, 13/08*
U.S. Cl. 252—8.6 7 Claims

1. An emulsion composition obtained by mixing components consisting essentially of (a) 100 parts by weight of an organopolysiloxane having a viscosity at 25° C. of at least 10 centistokes and having the general formula



wherein R represents a monovalent hydrocarbon or halogenated hydrocarbon group having from 1 to 20 carbon atoms, R^1 represents a hydrogen atom or a monovalent hydrocarbon group, m and n are integers each with a value $\geqq 1$, A represents a hydroxyl group or an alkoxy group having from 1 to 5 carbon atoms, Q represents a divalent hydrocarbon group and a is an integer with a value of 0 to 5, (b) 1 to 100 parts by weight of a silane having the general formula $(R^2)_3Si—Z—O—R^3$, wherein R^2 represents an alkoxy or alkoxyalkoxy group having from 1 to 5 carbon atoms, Z represents a divalent hydrocarbon group and R^3 represents a hydrogen atom, a hydroxyl group-containing alkyl group or a polyoxyalkylene group or a partial hydrolysis condensate of said silane, (c) 1 to 30 parts by weight of a surfactant selected from the group consisting of nonionic and cationic surfactants and (d) an emulsion-forming quantity of water.

4,541,937

SURFACTANT FLOODING SOLUTIONS WITH SULFONATED CREOSOTE

Abraham Morduchowitz, Monsey, and Farrokh Yaghmaie, Wappingers Falls, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 22, 1983, Ser. No. 564,158
Int. Cl.[4] E21B *43/22*
U.S. Cl. 252—8.55 D 11 Claims

1. An aqueous surfactant solution for injection into an underground hydrocarbon formation to increase hydrocarbon recovery comprising water, about 0.5% to about 6.0% by weight of a petroleum sulfonate surfactant, about 0.4% to about 4.0% by weight of a solubilizer selected from alkoxylated compounds of the group consisting of alkylpolyalkoxy sulfates, alkylarylpolyalkoxy sulfates, alkylpolyalkoxy sulfonates alkylarylpolyalkoxy sulfonates and mixtures thereof and

about 0.05% to about 3.0% by weight of a sulfonated creosote oil to decrease the viscosity of the aqueous surfactant solution,

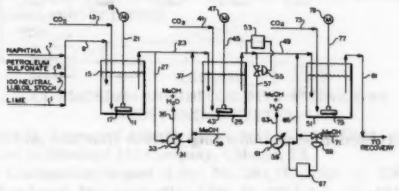
said total of surfactant, solubilizer and sulfonated creosote constituting about 1% to about 10% by weight of the total solution.

4,541,938

CONTINUOUS OVERBASING OF PETROLEUM SULFONATE WITH WATER REMOVAL AND METHANOL ADDITION BETWEEN REACTION STAGES

Douglas S. Jack, and James W. Garner, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 28, 1984, Ser. No. 594,651
Int. Cl.[4] C10M *1/40*
U.S. Cl. 252—33 6 Claims



1. A method for the continuous overbasing of petroleum sulfonate comprising:

(1) contacting CO_2 at reaction conditions with a reaction mixture of (a) neutral petroleum sulfonate, (b) solvent refined 100 neutral lube oil stock, (c) lime, (d) methanol, and (e) naphtha in a series of reaction vessels in which additional CO_2 is contacted seriatim in each succeeding reaction vessel with the effluent from the preceding reaction vessel,

(2) removing at least a portion of the effluent from each reaction vessel,

(3) reducing the water content of said at least a portion of said effluent to produce a reaction mixture of sufficiently reduced water content to reduce inhibition of the succeeding reaction,

(4) subsequently, supplementing the methanol content of said at least a portion of said effluent to provide a more reaction efficient amount of methanol in the succeeding reactor,

(5) introducing said at least a portion of said effluent into the succeeding reactor, and

(6) collecting overbased petroleum sulfonate reaction product from the last succeeding reactor.

4,541,939

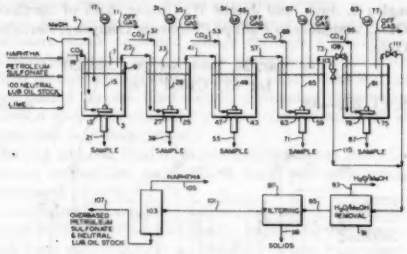
CONTINUOUS PROCESS FOR HIGHLY OVERBASED PETROLEUM SULFONATES USING A SERIES OF STIRRED TANK REACTORS

Douglas S. Jack, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 28, 1984, Ser. No. 594,642
Int. Cl.[4] C10M *1/40*
U.S. Cl. 252—33 16 Claims

1. A continuous process for preparing highly overbased petroleum sulfonate comprising seriatim contacting CO_2 at reaction conditions of temperature of carbonation in a range from about 25° C. to about 80° C., pressure of carbonation reaction from about 1 psia to about 30 psia, and in a reaction time that can vary from about 20 minutes to about 120 minutes overall with a feedstock mixture in each of a series of at least four stirred reaction zones, said feedstock mixture in the first reaction zone comprising (1) petroleum sulfonate, (2) solvent

refined 100 neutral lube oil stock, (3) $CA(OH)_2$, (4) methanol, and (5) naphtha and said feedstock mixture in each subsequent



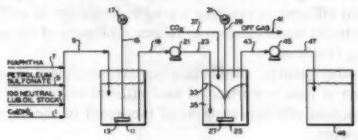
stirred reaction zone comprising effluent from the previous zone.

4,541,940

STIRRED VORTEX TANK REACTOR AND METHOD OF CO_2 ADDITION FOR PRODUCING OVERBASED PETROLEUM SULFONATE

J. Ronald Spence, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 28, 1984, Ser. No. 594,660
Int. Cl.[4] C10M *1/40*
U.S. Cl. 252—33 **4 Claims**



1. A method for producing overbased petroleum sulfonate comprising contacting CO_2 at reaction conditions of carbonation reaction temperature in a range of about 25° C. to about 80° C., of carbonation reaction pressure in a range of about 1 psia to about 30 psia, and of reaction time in a range of about 20 minutes to about 120 minutes, with a reaction mixture of (1) petroleum sulfonate, (2) solvent refined 100 neutral lube oil stock, (3) $Ca(OH)_2$, (4) MeOH, and (5) naphtha in the vapor space at the vortex surface of a stirred tank vortex reactor.

4,541,941

MIXED BORATE ESTERS AND THEIR USE AS LUBRICANT AND FUEL ADDITIVES

Andrew G. Horodysky, Cherry Hill, and Robert M. Gemmill, Jr., Pitman, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 414,281, Sep. 3, 1982, abandoned. This application Jun. 4, 1984, Ser. No. 616,752
Int. Cl.[4] C10M *1/54*
U.S. Cl. 252—49.6 **14 Claims**

1. A lubricant composition comprising a major proportion of a lubricating oil or grease and a friction-reducing amount of a borated mixture of a hydrocarbyl vicinal diol, or mixtures thereof, and a hydroxyl-containing aliphatic carboxylate or mixture of said carboxylates.

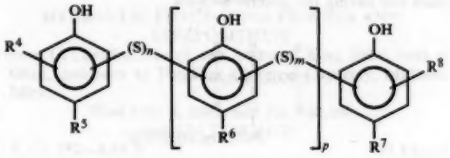
4,541,942

BORATED EPOXYHYDROCARBON-PHENOL SULFIDE PRODUCT AND LUBRICANT AND FUEL COMPOSITIONS CONTAINING SAME

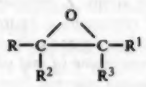
Andrew G. Horodysky, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 4, 1984, Ser. No. 616,753
Int. Cl.[4] C10M *1/54*
U.S. Cl. 252—49.6 **18 Claims**

1. A product made by reacting (1) a phenol sulfide of the formula



wherein R^4, R^5, R^6, R^7 and R^8 are hydrogen or the same or different hydrocarbyl groups containing 1 to 18 carbon atoms in any isomeric structural arrangement, and wherein with respect to R^5, R^6 and R^7 the total number of carbon atoms represented thereby cannot be less than 4 if 1 or 2 of such members are hydrogen, n and m are 1 to 4 and may be the same or different and p is 0 to 4 with (2) an epoxyhydrocarbon of the formula



wherein R, R^1, R^2 and R^3 are hydrogen or C_1 to C_{30} hydrocaryl groups, at least one of which is a hydrocarbyl group and (3) a boron compound selected from the group consisting of metaborates, boric acid, boric oxide and alkyl borates of the formula

$$(RO)_xB(OH)_y$$

wherein R is a C_1 to C_6 alkyl group, x is 1 to 3 and y is 0 to 2, their sum being 3, the reaction being carried out at from about 80° C. to about 260° C. using respective molar ratios of reactants of from about 1:1:1 to about 1:6:8.

4,541,943

HEAT PUMPS

Richard L. Powell, Cheshire, England, assignor to Imperial Chemical Industries PLC, London, England

Filed May 16, 1984, Ser. No. 610,801
Claims priority, application United Kingdom, May 20, 1983, 8313958; Jan. 4, 1984, 8400099; Mar. 7, 1984, 8406002
Int. Cl.[4] F25B *17/02*; C09K *5/04*
U.S. Cl. 252—67 **4 Claims**

1. A mechanical vapour recompression heat pump having an output temperature above 100° C. wherein the working fluid is selected from the group consisting of 1-methoxy-1,1,2,2-tetrafluoroethane, 1,1,2,2,3-pentafluoropropane and amines of the formula:

$$(XCF_2CHQ)_rNH_{3-r}$$

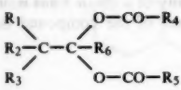
wherein X represents hydrogen or fluorine, Q represents hydrogen, lower alkyl, difluoromethyl or trifluoromethyl and r is an integer from 1 to 3.

4,541,944
COMPOSITIONS AND PROCESSES EMPLOYING ACTIVATORS FOR THE GENERATION OF PEROXYACIDS

William R. Sanderson, Warrington, England, assignor to Interox Chemicals Limited, London, England

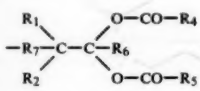
Filed Apr. 9, 1984, Ser. No. 598,009
Claims priority, application United Kingdom, Apr. 14, 1983, 8310081
Int. Cl.[3] C11D 7/38, 7/54
U.S. Cl. 252—95 46 Claims

1. A process for the generation of a peroxyacid species comprising the step of bringing into contact hydrogen peroxide or an adduct thereof or some other compound which develops hydrogen peroxide, with a peroxyacid generator having the general formula (I)

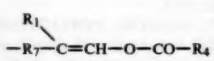


(I)

in which R_1 R_2 and R^6 are each selected from hydrogen and lower alkyl groups, and R_3 is selected from hydrogen, lower alkyl and aryl groups and groups of formula (II) or (III)

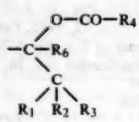


(II)



(III)

in which R_7 represents a carbon-carbon bond or an alkylene diradical, R_4 and R_5 each represent hydrogen or a lower alkyl, or an aryl, aralkyl or alkaryl group and R_5 can also be a from group of formula (IV) —R_8—CO—O—R_9 in which R_8 represents an alkylene diradical and R_9 represents a vinyl or alkyl substituted vinyl group or group of formula (V)



(V)

4,541,945
INHIBITOR-CONTAINING ACID CLEANING COMPOSITIONS AND PROCESSES

James D. Anderson, Fort Washington, and Sandra K. Seigle, Phoenixville, both of Pa., assignors to Amchem Products, Ambler, Pa.

Continuation-in-part of Ser. No. 431,857, Sep. 30, 1982, abandoned. This application Sep. 23, 1983, Ser. No. 534,353
Int. Cl.[4] C11D 7/00; C23G 1/06
U.S. Cl. 252—149 26 Claims

1. An aqueous acidic cleaning solution for cleaning acid soluble, water-insoluble deposits from metal surfaces comprising:

(a) from about 5 to about 200 g/l of at least one metal cleaning acid;

(b) from about 0.01 to about 9.5 g/l of at least one Mannich base;

(c) from about 0.006 to about 5.8 g/l of at least one thiourea compound;

(d) from about 0.008 to about 7.5 g/l of at least one surfactant which is a condensate of poly(oxyethylene) and poly(oxypropylene) groups; and

(e) at least one of a surfactant selected from the group consisting of alkyl trimethyl ammonium halides and alkyl (C_8–C_9) phenoxypolyethoxy ethanols, said alkyl trimethyl ammonium halides being present in an amount from about 0.004 to about 4.1 g/l and said alkyl (C_8–C_9) phenoxypolyethoxy ethanols being present in an amount from about 0.002 to about 0.8 g/l, with the proviso that when the metal cleaning acid is other than glycolic acid, formic acid or a mixture of glycolic acid and formic acid, an alkyl trimethyl ammonium halide must be present.

4,541,946
CORROSION INHIBITOR FOR AMINE GAS SWEETENING SYSTEMS

Loyd W. Jones, and John D. Alkire, both of Tulsa, Okla., assignors to Standard Oil Company, Chicago, Ill.

Continuation-in-part of Ser. No. 243,153, Mar. 12, 1981, abandoned. This application Mar. 31, 1983, Ser. No. 481,099
Int. Cl.[4] C09K 3/00; C23F 11/04, 11/18
U.S. Cl. 252—189 10 Claims

1. An inhibiting composition, comprising a water soluble quaternary pyridine salt, a sufficient amount of a surface-active agent, and an effective amount of a water soluble nickel compound.

4,541,947
METHOD FOR CROWD AND RIOT CONTROL

Charles J. Clark, Grand Prairie, and Edward M. Bennett, Dallas, both of Tex., assignors to Rockwood Systems Corporation, Lancaster, Tex.

Filed Feb. 10, 1984, Ser. No. 579,147
Int. Cl.[3] B01J 13/00
U.S. Cl. 252—307 8 Claims

1. A method of riot and crowd control to interdict rioters and the like comprising the steps of:

providing a barrier structure at a desired location to form an area through which passage by the rioters or crowd is to be denied,

the step of providing said barrier structure including positioning at least one collapsible chute member to form at least one portion of said barrier structure,

said chute member being sealed at one end thereof and including an opening at the other end thereof,

generating a high expansion foam and filling said collapsible chute member by flow of said generated foam through said opening to form a foam filled chute barrier element of a predetermined height thereby providing at least one portion of the barrier structure, and

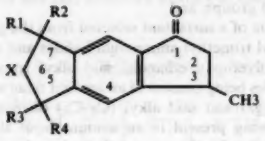
directing said high expansion foam into the area on one side of said chute barrier to fill the area defined by said barrier structure with said high expansion foam to form a foamed area thereby to prevent passage through said foamed area and the foam filled chute barrier element.

4,541,948
PERFUMES CONTAINING POLYALKYL SUBSTITUTED INDAN-1-ONES AND PROCESS FOR PREPARING THE COMPOUNDS

Daniel R. Joulain, Grasse, France, assignor to P. Robertet & Cie [Societe Anomyme], Grasse, France

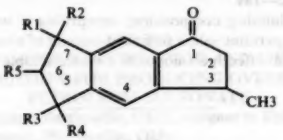
Filed Feb. 28, 1983, Ser. No. 470,327
Claims priority, application France, Mar. 11, 1982, 82 04293
Int. Cl.[4] A61K 7/46; C07C 49/36
U.S. Cl. 252—522 R 14 Claims

1. New polyalkyl substituted derivatives of indan-1-ones defined by the structural formula:



in which R1, R2, R3, R4 denote, separately, a hydrogen or an alkyl radical having one to three atoms of carbon, in which X represents a —CHR_5 group or a —CHR_5—CHR_6— group, in which R5, R6 represent, separately, a hydrogen or a methyl radical and in which at least three of the radicals R1, R2, R3, R4, R5 and R6 are alkyl radicals, which derivatives all comprise a ketone function in 1 position, no substitute in 2 position, one methyl group in 3 position and a five-membered or six-membered ring, symmetrical with respect to the ring bearing the ketone function, comprising at least three alkyl substitutes.

3. New products according to claim 1, polyalkyl derivatives of hydro(s) indacen(2H)-1-one, defined by structural formula:



in which R1, R2, R3, R4 represent a hydrogen or an alkyl radical having one to three atoms of carbon, R5 represents a hydrogen or a methyl radical and at least three of the radicals R1, R2, R3, R4, R5 are alkyl radicals.

4,541,949

POLYHYDROINDAN CARBOXALDEHYDES

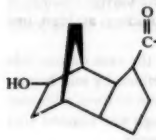
Mark A. Sprecker, Sea Bright; William L. Schreiber, Jackson; Futoshi Fujioka, Wanamassa; Richard M. Boden, Ocean; Manfred H. Vock, Locust; Patrick Whelan, Matawan, and Marie R. Hanna, Hazlet, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

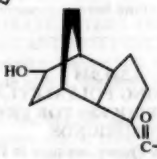
Filed Sep. 1, 1983, Ser. No. 528,568

Int. Cl.[4] A61K *7/46;* **C07C** *7/34*

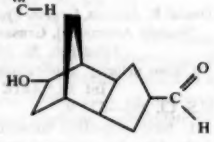
U.S. Cl. 252—522 R **2 Claims**

1. The composition of matter having a structure selected from the group consisting of:





; and



4,541,950

USE OF MACROCYCLIC LACTONE IN AUGMENTING OR ENHANCING AROMA OR TASTE OF CONSUMABLE MATERIALS

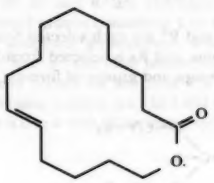
Augustinus G. Van Loveren, Rye, N.Y.; Marie R. Hanna, Hazlet, N.J.; Domenick Luccarelli, Jr., Neptune, N.J.; David R. Bowen, Red Bank, N.J.; Manfred H. Vock, Locust, N.J., and Wilhelmus J. Wiegers, Red Bank, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 514,523, Jul. 18, 1983,. This application Jun. 5, 1984, Ser. No. 617,584

Int. Cl.[4] A61K *7/46;* **C11B** *9/00*

U.S. Cl. 252—522 R **1 Claim**

1. A process for augmenting or enhancing the aroma of a consumable material selected from the group consisting of perfume compositions and, colognes comprising the step of intimately admixing with said consumable material, an aroma augmenting or enhancing quantity of a cis or trans isomer or mixture of cis and trans isomers of the compound defined according to the structure:



4,541,951

1(1,3-DIOXOBUTANE)-3,3-DIMETHYLCYCLOHEXANE USEFUL IN PERFUMES

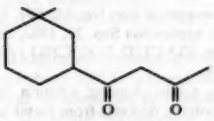
John B. Hall, Rumson, and Mark A. Sprecker, Sea Bright, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 551,481, Nov. 14, 1983, Pat. No. 4,503,258, which is a division of Ser. No. 441,221, Nov. 12, 1982, Pat. No. 4,449,007, which is a continuation-in-part of Ser. No. 375,767, May 6, 1982, Pat. No. 4,413,139. This application Sep. 14, 1984, Ser. No. 650,709

Int. Cl.[4] C11B *9/00*

U.S. Cl. 252—522 R **7 Claims**

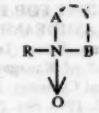
1. A process for augmenting or enhancing the aroma of a consumable material selected from the group consisting of perfume compositions, colognes and perfumed articles comprising the step of intimately admixing with said consumable material, an aroma augmenting or enhancing quantity of the compound having the structure:



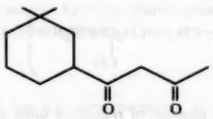
7. A process for producing a stable, single-phase aqueous alkali metal hypochlorite solution consisting in order of the steps of:

(a) adjusting the pH of an aqueous alkali metal hypochlorite solution to the range of 12–13.5;

(b) admixing an amine oxide composition consisting to an amine oxide having the formula:



wherein R is straight chain alkyl; wherein more than 55% of the R moieties consist of straight chain alkyl containing from 11 up to 13 carbon atoms; and wherein A and B are each separately methyl or taken together complete a morpholine ring, with a composition consisting essentially of the product having the structure:



to said aqueous hypochlorite solution thereby forming a premix; and

(c) adding said premix to the pH adjusted hypochlorite solution.

4,541,952

PURIFICATION METHOD OF HUMAN INTERFERON

Kazuo Hosoi, Kamakura, and Hitoshi Ozawa, Hiratsuka, both of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed May 12, 1983, Ser. No. 494,021

Claims priority, application Japan, May 17, 1982, 57-81505

Int. Cl.[4] A61K *45/02*

U.S. Cl. 260—112 R **22 Claims**

1. A method of purifying human beta-interferon, comprising the successive steps of:

(a) adsorbing a crude beta-human interferon solution on an immobilized blue carrier,

(b) contacting the immobilized blue carrier with an eluant to produce an eluate containing the interferon,

(c) contacting said eluate with a carrier having a chelating residue and including at least one metal ion selected from the group consisting of Co^{2+}, Ni^{2+} and Zn^{2+}, wherein said metal ion is chelated to the chelating residue so a to absorb the interferon, and

(d) contacting said carrier with an eluant to produce a purified and concentrated interferon solution.

4,541,953

PREPARATION OF ANTI-T-LYMPHOCYTE GLOBULIN

Heidi Thimel-Baumer, Candidstrasse 18, 8000 Munchen 90, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 347,502, Feb. 9, 1982, abandoned. This application Feb. 21, 1984, Ser. No. 582,030

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1981, 3105150

Int. Cl.[4] C07G *7/00;* **A61K** *39/395*

U.S. Cl. 260—112 B **5 Claims**

1. A process of preparing anti-T-lymphocyte globulin comprising:

(a) culturing lymphoblastoid T-cells of the cell line

(b) in vivo production of antiserum; and

(c) recovery of the anti-T-lymphocyte.

4,541,954

METHOD FOR PREPARING 6-CHLORO-N-METHYL-2,3,4,5-TETRAHYDRO-1H-3-BENZAZEPINE

Stanley J. Borowski, West Chester, and Thomas A. Post, Malvern, both of Pa., assignors to SmithKline Beckman Corporation, Philadelphia, Pa.

Filed Sep. 5, 1984, Ser. No. 647,552

Int. Cl.[4] C07D *223/16*

U.S. Cl. 260—239 BB **4 Claims**

1. In the method of preparing 6-chloro-N-methyl-2,3,4,5-tetrahydro-1H-3-benzazepine comprising the step of reacting N-methyl-N-[2-(2'-chlorophenyl)ethyl]-2-chloroethylamine in the presence of a solution of an aluminum chloride catalyst, the improvement comprising using trichlorobenzene as the solvent.

4,541,955

AZETIDINONE-4-CARBOXYLATE CONTAINING A PROTECTED 3-ACETYL GROUP AND PROCESS FOR THEIR PREPARATION

Károly Lempert; Kálmán Hársanyi; Gabor Doleschall; Gyula Hornyak; József Nyitrai , all of Budapest; Károly Zauer, Szentendre; József Fetter, Budapest; Gyula Simig, Budapest; Zsuzsanna Visky née Gombos, Budapest, and Gizella Barta née Szalai, Vecses, all of Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

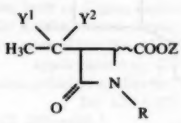
Continuation-in-part of Ser. No. 301,883, Sep. 11, 1981, Pat. No. 4,434,099. This application Jan. 17, 1983, Ser. No. 458,264

Claims priority, application Hungary, Sep. 15, 1980, 2263

Int. Cl.[4] C07D *205/08, 405/04, 409/02, 487/04*

U.S. Cl. 260—330.9 **2 Claims**

1. A compound of the formula (V)



(V)

wherein

R is benzyl or benzyl substituted by one or two methoxy groups;

Z is methyl or ethyl; and

Y^1 and Y^2 together with the carbon atom to which they are attached form together a 1,3-dioxolan-2-yl group or a thioanalog thereof.

4,541,956

TIN STEROIDS AND THEIR USE AS ANTINEOPLASTIC AGENTS

Nathan F. Cardarelli, and Sebastian V. Kanakkanatt, both of Akron, Ohio, assignors to Unique Technologies, Inc., Akron, Ohio

Filed Jul. 28, 1983, Ser. No. 518,073

Int. Cl.[4] C07J *9/00*

U.S. Cl. 260—397.1 **3 Claims**

1. A tin steroid compound,

said tin steroid compound being the reaction product of a steroid compound and a tin compound, wherein said steroid compound is selected from the group consisting of cholic acid, testosterone, deoxycholic acid, cholesteryl chloride, cholesterol, and dehydroxycholesterol, and

wherein R_1, R_2 and R_3 can be the same or different, wherein said R_1, R_2 and R_3 are selected from the group consisting of

hydrogen, an alkyl having from 1 to 6 carbon atoms, a cycloalkyl having from 4 to 10 carbon atoms, an aromatic or an alkyl substituted aromatic having from 6 to 12 carbon atoms, and an aromatic substituted alkyl having from 7 to 12 carbon atoms, and wherein X is selected from the group consisting of hydroxyl, halide, hydroxide oxide wherein R_2 and R_3 do not exist, a dicarboxylic acid having from 2 to 10 carbon atoms, and a monocarboxylic acid having from 2 to 6 carbon atoms.

2. A tin steroid compound according to claim 1, wherein said tin compound is selected from the group consisting of triphenyltin hydroxide, n-butyltin hydroxide oxide, triphenyltin chloride, tri-n-butyltin adipate, tri-n-butyltin chloride, hexamethylditin, n-propyltin trihalide, tri-n-butyltin fluoride, triethyltinhalide, diethyltin halide, n-butyltin hydroxide oxide, trimethyltin halide, and triethyltin halide.

4,541,957

PROCESS FOR PREPARING IODOVINYL-ESTRADIOL

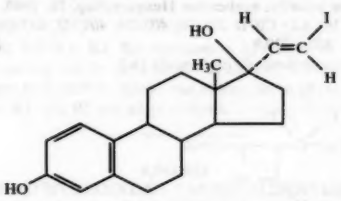
Iwao Nakatsuka, Hyogo, Japan; William Eckelman, Rockville, Md., and Waclaw J. Rzeszotarski, Washington, D.C., assignors to The George Washington University, Washington, D.C.

Filed Sep. 7, 1983, Ser. No. 529,908

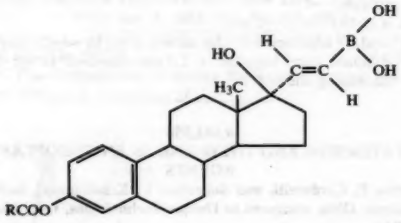
Int. Cl.[4] A61K *49/00, 43/00;* **C07J** *3/00*

U.S. Cl. 260—397.2 **10 Claims**

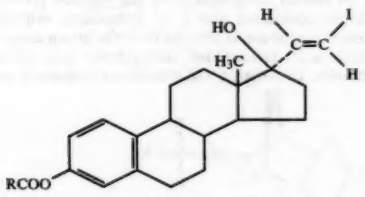
1. A process for preparing 17α-[(E)-2-iodovinyl]-estra-1,3,5(10)-triene-3,17β-diol of the formula:



which comprises iodinating (E)-[3-acyloxy-17β-hydroxyestra-1,3,5(10)-triene-17α-yl]vinyl dihydroxyborane of the formula:



wherein R is lower alkyl group having 1 to 4 carbon atoms, and hydrolyzing the resultant 3-acyloxy-17α-[(E)-2-iodovinyl]-estra-1,3,5(10)-triene-17β-ol of the formula:



wherein R is as defined above.

4,541,958

HARDENING AGENT FOR EPOXY RESINS COMPRISING AN AMIDEAMINE COMPOUND

Akira Miyamoto; Katsuo Sato; Tetsushi Ichikawa, and Masahiro Kurokawa, all of Kanagawa, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

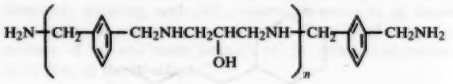
Filed May 23, 1983, Ser. No. 497,283

Claims priority, application Japan, May 21, 1982, 57-86150

Int. Cl.[4] C09F *5/00, 7/00*

U.S. Cl. 260—404.5 **4 Claims**

1. A hardening agent for epoxy resins comprising an amideamine compound which is a reaction produce between (A) a polyamine mainly comprising a compound represented by the formula:



wherein n is the number of repeating units and represents an integer of 1 or 2, which is obtained by reacting m-xylylenediamine and epichlorohydrin, and (B) a carboxylic acid selected from the group consisting of polycarboxylic acids, dicarboxylic acids and monocarboxylic acids.

4,541,959

DIPHENYLSULFIDE DERIVATIVES

Kazuyuki Tomisawa, Saitama; Kazuya Kameo; Toru Matsunaga, both of Ageo; Shiuji Saito, Niiza; Yoshimoto Nakashima, Ageo, and Kaoru Sata, Tokorozawa, all of Japan, assignors to Taisho Pharmaceutical Co., Ltd., Tokyo, Japan

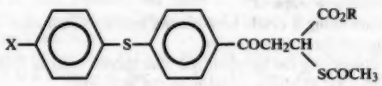
Filed Aug. 29, 1984, Ser. No. 645,356

Claims priority, application Japan, Aug. 31, 1983, 58-159955

Int. Cl.[4] C07C *153/023*

U.S. Cl. 260—455 R **7 Claims**

1. Diphenylsulfide derivatives represented by the general formula



wherein, X represents a hydrogen atom, a chlorine atom or a methyl group, and R represents a hydrogen atom or a lower alkyl group.

4,541,960

METHOD FOR PREPARING CYANACETALDEHYDE ACETALS

Christoph Theis, Bornheim, and Gudrun Fickert, Troisdorf, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Cologne, Fed. Rep. of Germany

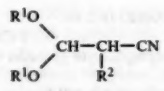
Filed Jun. 2, 1983, Ser. No. 500,471

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1982, 3222519

Int. Cl.[4] C07C *120/00, 121/16, 121/46, 121/75*

U.S. Cl. 260—464 **17 Claims**

1. A method of preparing cyanacetaldehyde acetals of the formula

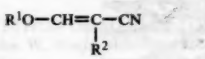


I

wherein R^1 represents identical or different straight-chain or branched alkyl moieties of 1 to 20 carbon atoms, or —(CH_2.

$)_m$—Cyc, Cyc being carbon isocyclic or mononuclear or polynuclear, carbocyclic aromatic with m=0 to 5, or one of the moieties R^1 or both of the moieties R^1 representing —(alkylene)$_p$—OH with p=2 to 6, and wherein R^2 represents H, R^1, or the moieties $—(CH_2)_m—OR^3$ or $—(CH_2)_m—CH(OR^3)_2$, R^3 representing straight-chain or branched chain alkyl moieties of 1 to 12 carbon atoms and m and Cyc having the meanings given above, comprising the steps of:

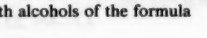
reacting at temperatures in the range of 50° to 100° C., compounds of the formula



II

wherein R^1 and R^2 have the above meaning,

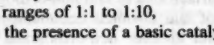
with alcohols of the formula



III

wherein R^1 has the same meaning, in a molar ratio of compounds of formula II to alcohols of formula III in the ranges of 1:1 to 1:10,

in the presence of a basic catalyst of the formula



IV

wherein M is an alkali metal with n=1 or an alkaline earth metal with n=2 and R^1 has the same meaning as above, and which is dissolved or suspended in the alcohol component, said catalyst concentration being maintained in the range of 0.5 to 2.5 wt.% with respect to the alcohol; and thereafter deactivating the catalyst with carbon dioxide or an inorganic or organic acid with the exception of sulfuric and/or acetic acid.

4,541,961

NITRILE PURIFICATION

Robert I. Davidson, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Aug. 29, 1983, Ser. No. 526,964

Int. Cl.[4] C07C *121/66*

U.S. Cl. 260—465 G **9 Claims**

1. A process for separating a nitrile from a ketone having a boiling point so similar as to make simple distillation an ineffective way of separating them, which process comprises treating the nitrile/ketone mixture with an alkali metal borohydride so as to complex the ketone.

4,541,962

PREPARATION OF 4-(3-CYANO-4-NITROPHENYL)PHENOLS

G. Patrick Stahly, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed May 7, 1984, Ser. No. 607,431

Int. Cl.[4] C07C *121/75*

U.S. Cl. 260—465 F **10 Claims**

1. A process which comprises reacting a 2-cyano-1-nitrobenzene having a replaceable hydrogen in the 4-position with a phenol having a replaceable hydrogen in the 4-position in an inert solvent and in the presence of a strong base to form a 4-(3-cyano-4-nitrophenyl)phenol.

4,541,963

4-TRIFLUOROMETHYLPHENYLHYDRAZINOMETHYLENE-MALONONITRILES

Leslie R. Hatton, Chelmsford; Edgar W. Parnell, Hornchurch, and David A. Roberts, Bedford, all of England, assignors to May & Baker Limited, Essex, England

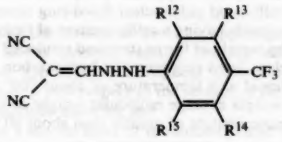
Division of Ser. No. 398,336, Jul. 15, 1982, Pat. No. 4,505,740. This application Nov. 14, 1984, Ser. No. 671,243

Claims priority, application United Kingdom, Jul. 17, 1981, 8122142; Feb. 5, 1982, 8203369

Int. Cl.[4] C07C *121/78*

U.S. Cl. 260—465 E **1 Claim**

1. Compounds of the general formula:



wherein R^{12} represents a chlorine atom, R^{13} represents a hydrogen, fluorine or chlorine atom, R^{14} represents a hydrogen or fluorine atom and R^{15} represents a hydrogen, fluorine or chlorine atom, with the proviso that when R^{14} represents a fluorine atom, R^{15} represents a fluorine or chlorine atom, or R^{12}, R^{13} and R^{15} each represent a fluorine atom and R^{14} represents a hydrogen or fluorine atom.

4,541,964

PRODUCTION OF METHACRYLONITRILE

Tsutomu Katsumata, Yokohama, and Tetsuro Dozono, Yokosuka, both of Japan, assignors to Asahi Kasei Kasyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 421,072, Sep. 22, 1982, abandoned. This application Aug. 27, 1984, Ser. No. 644,152

Claims priority, application Japan, Oct. 26, 1981, 56-170106

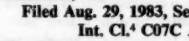
Int. Cl.[4] C07C *120/14, 120/00*

U.S. Cl. 260—465.3 **7 Claims**

1. A process for preparing methacrylonitrile by reacting isobutylene or tertiary butanol with ammonia and oxygen in a gaseous phase, comprising:

(A) carrying out the reaction

(i) on a catalyst system consisting essentially of (1) 30–70% by weight of a silica catalyst carrier and (2) a catalyst having a composition represented by the following general formula:



wherein

A is at least one element selected from the group consisting of potassium, rubidium and cesium, and a, b, c, d, e and x are the atomic ratios of A, bismuth, iron, sodium, phosphorus and oxygen, respectively, relative to twelve atoms of molybdenum, wherein:

a is between 0.05 and 1.0

b is between 1 and 18,

c is between 2 and 10,

d is between 0 and 3.6,

e is between 0 and 3, and

x is the number of oxygen atoms required to satisfy the valence requirements of the other elements present, said catalyst having a surface area of 2.5–6.2 m^2/g, and a feedstock conversion rate with no substantial decrease in conversion percentage points from the initial value while producing carbon deposition of less than 0.05 g carbon/100 g catalyst, after 1000 hours of continuous use;

(ii) at a reaction temperature of 380° C. to 480° C.; and

(iii) at a contact time of 1 to 10 seconds; and

(B) maintaining the oxygen volume concentration in the gaseous reaction mixture at the outlet of the catalyst bed below about one percent.

4,541,965

DISPERSANTS FOR AQUEOUS SLURRIES

Timothy Thomson, and Ronald L. Glomski, both of Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 573,738, Jan. 25, 1984, abandoned. This application Aug. 22, 1984, Ser. No. 642,988

Int. Cl.⁴ C07C *143/24*

U.S. Cl. 260—505 C **9 Claims**

1. A water-soluble dispersant composition comprising a mixture of sulfonated polynuclear fused-ring aromatic hydrocarbon compounds having a sulfur content of from about 10 to about 20% by weight of the mixture and produced by sulfonating polynuclear fused-ring aromatic hydrocarbon compounds which are liquid at a temperature of about 100° Centigrade, and have a weight average molecular weight of less than 500 and an aromatic content of greater than about 60 percent.

4,541,966

GAS HUMIDIFYING APPARATUS AND METHOD

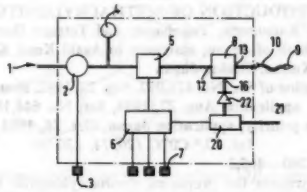
Brendan E. Smith, Studley, England, assignor to Penlon Limited, England

Filed Aug. 24, 1984, Ser. No. 643,697

Claims priority, application United Kingdom, Aug. 25, 1983, 8322855

Int. Cl.⁴ A61M *11/02*

U.S. Cl. 261—27 **9 Claims**



1. Gas humidifying apparatus comprising a chamber arranged to receive a fluctuating gas flow from an oscillating valve means, a liquid reservoir communicating with the chamber such that in use liquid from the reservoir passes into the chamber and is entrained in droplet form by the flow of gas, liquid supply means intermittently operable to introduce a predetermined quantity of liquid into the reservoir, and control means adapted to maintain said valve means in a closed condition during operation of said liquid supply means.

4,541,967

PACKING FOR PACKED TOWERS FOR INTER-FLUID CONTACT

Hideyuki Masaki, Hashima, Japan, assignor to NGK Insulators, Ltd., Japan

Filed Dec. 1, 1983, Ser. No. 557,003

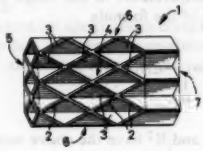
Claims priority, application Japan, Dec. 8, 1982, 57-185458[U]

Int. Cl.⁴ B01F *3/04*

U.S. Cl. 261—95 **5 Claims**

1. A packing material for filling a tower through which fluids to be processed flow in contact with each other, said packing material comprising:

a packing block having a honeycomb structure including partition walls defining a multiplicity of channels which are formed in a non-concentric parallel relationship with each other, thereby acting as fluid passages through the packing block, said packing block having at least eight planar sides and at least two of said at least eight planar sides are non-orthogonal with respect to a center line of said channels and at least two of said planar sides are orthogonal with respect to a center line of said channels and at least four of said planar sides are disposed in planes which include outer edges of adjacent partition walls, such that said at least four planar sides are parallel to center lines of said channels, wherein said at least two



non-orthogonal sides have a surface area which is greater than a surface area of said at least two orthogonal sides and said at least four planar sides have a surface area which is less than said surface area of said non-orthogonal sides and at least one of said channels communicates a non-orthogonal side with another non-orthogonal side and another at least one of said channels comprises an orthogonal side with another orthogonal side.

4,541,968

COOLING TOWER

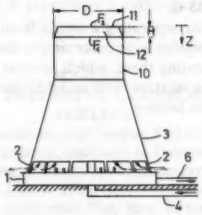
Günter Ernst; Edmund Baer, both of Karlsruhe; Dieter Wurz, Pfinztal; Hans Dittrich, and Wilhelm Roller, both of Karlsruhe, all of Fed. Rep. of Germany, assignors to Günter Ernst, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 932,431, Aug. 10, 1978, abandoned, which is a continuation of Ser. No. 756,982, Jan. 5, 1977, abandoned, which is a continuation of Ser. No. 557,350, Mar. 11, 1975, abandoned, and Ser. No. 147,264, May 5, 1980, abandoned, which is a continuation-in-part of Ser. No. 971,895, Dec. 21, 1978, abandoned, which is a continuation of Ser. No. 832,688, Sep. 12, 1977, abandoned, which is a division of Ser. No. 756,982. This application May 5, 1980, Ser. No. 147,264

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1974, 2414172

Int. Cl.⁴ B01F *3/04*

U.S. Cl. 261—109 **27 Claims**



18. A natural draught cooling tower of circular cross-section having a crown,

the ratio of the vertical height of said crown to the diameter thereof at the lower end thereof being between about 1/3 and 1/12,

the ratio of the vertical height of said crown to the total height of the cooling tower being between about 1/33 and 1/10,

said crown having a diverging outer wall and a converging inner wall radially separated from each other at the upper extremity thereof,

the ratio of the cross-sectional area of the upper end of said

converging inner wall to the cross-sectional area of the lower end of said converging inner wall creating at the upper end of the tower in still air or air of low velocity a pressure gradient immediately adjacent said converging inner wall inside the tower greater than the pressure gradient immediately adjacent said diverging outer wall external of the cooling tower; and

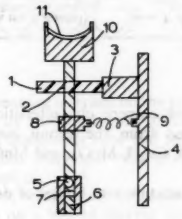
said diverging outer wall serving as a deflector in winds greater than about 10 m/s to impair the creation of a vortex extending over the tower.

4,541,969

METHOD OF MAKING TORIC SPIN CAST LENSES

Charles W. Neefe, Box 429, 811 Scurry St., Big Spring, Tex. 79720

Filed Dec. 3, 1984, Ser. No. 677,867
Int. Cl.[4] B29D *11/00*
U.S. Cl. 264—1.4 **16 Claims**



1. A method of making spin cast lenses having a toric concave surface by the steps of providing a concave lens mold having a peripheral retaining ring extending above the concave optical mold surface, placing a selected liquid lens monomer in the concave lens mold, rotating the concave lens mold around the optical axis of the spin cast lens, aligning the axis of mold rotation and the lens optical axis to the perpendicular position, displacing the axis of mold rotation from the perpendicular two times during each revolution of the lens mold, synchronizing the displacement from perpendicular to occur at two rotational positions separated by 180 degrees of lens mold rotation, the selected liquid lens monomer is allowed to move upward on the peripheral retaining ring surrounding the concave optical mold surface at the rotational positions displaced from the perpendicular, and a shorter concave radius of curvature is present through the directions of monomer movement, allowing the rotating liquid lens monomer to polymerize and form a spin cast lens having a toric concave surface.

4,541,970

METHOD FOR FABRICATING A CABLE CORE INCLUDING OPTICAL FIBERS

Lendall R. Caverly, Jr., Barrington, N.H.; Robert F. Gleason, Freehold, N.J.; Don A. Hadfield, North Hampton, N.H.; Norman E. McNerney, Hampton, N.H.; Daniel A. Meade, Durham, N.H.; Alfred G. Richardson, Aberdeen, N.J.; Nicholas Semitros, Somersworth, and Martin Q. Thornton, Strafford, both of N.H., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 24, 1983, Ser. No. 469,428
Int. Cl.[4] G02B *5/14*
U.S. Cl. 264—1.5 **4 Claims**

1. A method for fabricating a cable core including a plurality of optical fibers, the method comprising the steps of

heating a central strength member;

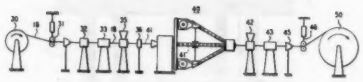
extruding a first layer of a thermoplastic material onto the heated central strength member;

with a planetary strander helically laying the plurality of optical fibers with a planetary motion onto the first layer of thermoplastic material;

a plurality of bobbins within the strander pay out the optical fibers;

the optical fibers pass entirely enclosed, each fiber passing through a separate part of a whipping prevention enclosure, from the bobbins to a rotating closing die;

the central strength member, coated with the first layer of the thermoplastic material and helically wrapped with the optical fibers, passes through the closing die, which rotates with the rotation of the helix, applying to the optical fibers forces directed radially into the cable core but without applying to the optical fibers forces directed side-to-side with respect to the surface of the first layer of thermoplastic material; and



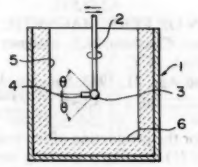
extruding a second layer of the thermoplastic material over the plurality of optical fibers to merge with the first layer of thermoplastic material.

4,541,971

METHOD FOR THE GUNNING OF REFRACTORIES

Masaru Takashima, 4-12-15, Takanawa, Minato-ku, Tokyo, Japan

Filed Apr. 28, 1983, Ser. No. 489,457
Int. Cl.[4] F27D *1/16*
U.S. Cl. 264—30 **3 Claims**



1. A method for gunning a refractory coating onto an interior working surface of a vessel, comprising the steps of inserting into the vessel a nozzle carried on a support for universal pivotal movement, mixing a refractory aggregate and a binder with water in the nozzle, ejecting the admixture from the nozzle toward the working surface to be coated, and while mixing and ejecting, sliding and rotating the nozzle such that the nozzle draws a cone having its apex at the nozzle's pivot and its axis normal to the working surface with the included apex angle not exceeding 90°, and also turning the nozzle about an axis perpendicular to the axis of the cone and intersecting the nozzle's pivot.

4,541,972

PREPARATION OF CELLULOSE ACETATE MEMBRANE AND ITS USE FOR POLAR SOLVENT-OIL SEPARATION

David L. Wernick, Elizabeth, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Dec. 14, 1983, Ser. No. 561,287
Int. Cl.[3] B01D *13/00*
U.S. Cl. 264—41 **3 Claims**

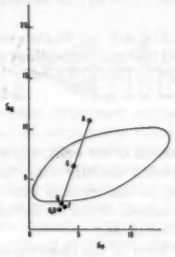
1. A method for producing a cellulose 1.7–1.8 acetate membrane comprising:

(a) dissolving 5 to 40 weight percent cellulose 1.7–1.8 acetate polymer in a dual casting solvent system comprising 15 to 50 weight percent solvent A and 20 to 80 weight percent solvent B wherein solvent A is more volatile than solvent

B and wherein solvent B is a nonsolvent for the polymer while solvent A is either a solvent or nonsolvent for the polymer, but the mixture A plus B is a solvent for the polymer;

(b) casting a film using the solution of step (a);

(c) evaporating a portion of the more volatile solvent A from the film; and



(d) gelling the partially evaporated film in a gelation solvent C which does not dissolve the polymer but is miscible with solvents A and B and further wherein the solvent combination of B+C is a nonsolvent for the polymer, wherein solvent A possesses three dimensional solubility parameters in the range of δ_D=7 to 10, δ_P=1 to 10 and δ_H=6 to 12 and solvents B and C possess three dimensional solubility parameters in the range of δ_D=7 to 10, δ_P=0 to 10 and δ_H<2.5, wherein all δ's are in $(cal/cm^3)^{\frac{1}{2}}$.

4,541,973

PRODUCTION OF FERRIMAGNETIC SPINEL FIBERS

Richard M. Arons, Chatham, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Apr. 21, 1983, Ser. No. 487,321
Int. Cl.⁴ C04B *35/71*
U.S. Cl. 264—60 **7 Claims**

1. A process for the production of ferrimagnetic spinel fibers which comprises (1) forming a spinning composition comprising a fluid organic polymer medium having dispersed therein particulate ferrite with an average particle size less than about 1000 angstroms, wherein the ferrite is a spinel corresponding to the formula:

$$M_1Fe_2O_4$$

where M is manganese, iron, cobalt, nickel, copper, zinc, cadmium, magnesium, barium, strontium, or any combination thereof; (2) spinning the composition into a coagulating medium to form solid fibers; and (3) stabilizing the fibers by chemical treatment with a reactive free radical-forming crosslinking agent and pyrolyzing the fibers at a temperature between about 800°–2500° C. in the presence of molecular oxygen to form ferrimagnetic $M_1Fe_2O_4$ spinel fibers.

4,541,974

SEMICONDUCTIVE CERAMIC COMPOSITIONS WITH A NONLINEAR VOLT-AMPERE CHARACTERISTIC, AND PROCESS FOR PREPARING COHERENT BODIES OF SUCH COMPOSITIONS

Nobutatsu Yamaoka, Harunamachi; Akira Tsukada, Takasaki, and Kazuo Sasazawa, Maebashi, all of Japan, assignors to Taiyo Yuden Co., Ltd., Tokyo, Japan

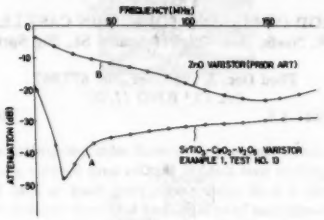
Division of Ser. No. 280,801, Jul. 6, 1981,. This application Aug. 25, 1983, Ser. No. 526,446
Claims priority, application Japan, Jul. 30, 1980, 55-104713
Int. Cl.⁴ C04B *33/32*
U.S. Cl. 264—61 **6 Claims**

1. A process for the fabrication of coherent bonded bodies of a semiconductive ceramic composition with a nonlinear volt-ampere characteristic, particularly well suited for use in varistors, which comprises:

(a) providing a mixture of: $SrTiO_3$ in finely divided form;

(2) from about 0.001 to about 5.000% of at least one metal oxide in finely divided form, for making the composition semiconductive, selected from the group consisting of Nb_2O_5, Ta_2O_5, WO_3, La_2O_3, CeO_2, Nd_2O_3, Pr_6O_{11}, Dy_2O_3, Y_2O_3, and Sm_2O_3;

(3) from about 0.010 to about 5.000% of at least one other metal oxide in finely divided form, for improving the



nonlinear volt-ampere characteristic of the composition, selected from the group consisting of V_2O_5, Cr_2O_3, CuO, Cu_2O, MoO_3, and MnO_2; and

(4) a binder;

(b) molding the mixture into bodies of desired shape under pressure;

(c) firing the bodies in a temperature range of from about 1300° to about 1500° C. in a nonoxidative atmosphere; and

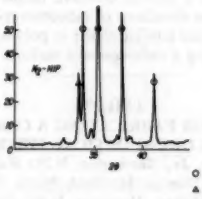
(d) heating the fired bodies in a temperature range of from about 800° to about 1300° C. in an oxidative atmosphere.

4,541,975

METHOD FOR PRODUCING HIGH STRENGTH SINTERED SILICON CARBIDE

Katsuhiko Honma, Akashi; Tsuneo Tatsuno, Kobe, and Hiroshi Okada, Amagasaki, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jun. 15, 1982, Ser. No. 388,657
Claims priority, application Japan, Jun. 17, 1981, 56-94386
Int. Cl.⁴ C04B *41/06*
U.S. Cl. 264—62 **5 Claims**



1. A method for producing a high strength sintered silicon carbide, the method comprising:

molding a mixture of silicon carbide powder and at least one sintering aid into a green compact of a predetermined shape;

preliminarily sintering said green compact to obtain a preliminarily sintered compact having a relative density higher than 80%;

charging said preliminarily sintered compact in a hot isostatic pressing equipment without using a capsule; and

subjecting said preliminarily sintered compact to a hot isostatic pressing treatment in a high-temperature and high-pressure N_2 gas atmosphere maintaining a pressure higher than 500 atms and a temperature in the range of

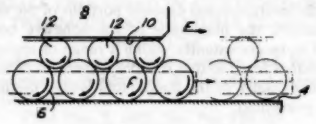
1400°–2300° C. whereby said silicon carbide reacts with said N_2 to form a layer of silicon nitride.

4,541,976

METHOD OF MANUFACTURING CYLINDRICAL CERAMIC TUBES HAVING LOCALIZED IMPRINTS ON THEIR INNER FACES

Jean Batigne, Enghien-les-Bains; Claude Deslandes, Montpellier; Jacques Gillot, Laloubere, and Paul Tritten, Tarbes, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jul. 7, 1982, Ser. No. 396,108
Int. Cl.[4] B28B *21/52*
U.S. Cl. 264—69 **17 Claims**



1. A method of making imprints on the internal walls of tube portions obtained by the continuous molding of a ceramics-based paste into a continuous tube and the cutting up of the continuous tube into individual tube portions, said method comprising the steps of:

(a) while the tube portions are still deformable, placing the tube portions on a bed of driving rollers disposed on a horizontal support, the axes of the driving rollers being parallel to each other and in the same horizontal plane such that the axes of the tube portions are parallel to the axes of the driving rollers;

(b) rotating the driving rollers about their axes in the same direction, thereby causing a translatory movement of the driving rollers, which roll without sliding on the horizontal support;

(c) applying pressure-exerting means to at least a part of the tube portions so that the tube portions are clamped between the driving rollers and the pressure-exerting means; and

(d) imprinting the tubular portions with at least one imprint-making tool provided on either the driving rollers or the pressure-exerting means, the imprint-making tool having a main imprinting direction which does not coincide with the direction of the axes of the driving rollers, by creating a relative movement between the tube portions and the imprint-making tool while permitting substantially no sliding between the tube portions and the imprint-making tool.

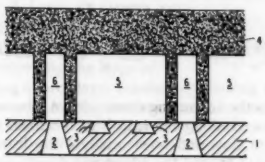
4,541,977

METHOD FOR PRODUCING SEPARATING NOZZLE ELEMENTS

Erwin Becker, Karlsruhe; Wilhelm Bier, Leopoldshafen; Wolfgang Ehrfeld, Karlsruhe, and Dietrich Münchmeyer, Weingarten, all of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Fed. Rep. of Germany

Filed Feb. 28, 1983, Ser. No. 470,281
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1982, 3206820
Int. Cl.[4] B29C *1/02*
U.S. Cl. 264—102 **7 Claims**

1. Method for producing a separating nozzle element including a separating body and terminal plates, for the separation of a gaseous or vaporous mixture, wherein the separating body comprises separating structures which penetrate the separating body and define separating chambers and gas conduits, and the terminal plates are provided with channels for the intake and discharge of gas streams, and wherein the separating structures are formed by producing a mold layer which contains negative outlines of the separating structures, and thereafter filling the negative outlines of the mold layer with a structure material which is compatible with the gaseous or vaporous mixture to be separated to form the separating structures, comprising: producing the mold layer containing the negative outlines of the separating structure by shaping the mold layer in a mold



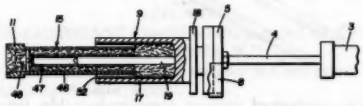
formed from the terminal plate and a reusable tool provided with the positive outlines of the separating structures, the mold being evacuated and then filled with liquid mold material to form the mold layer, the terminal plate being of such design that a form-locking band is established between the mold layer and terminal plate.

4,541,978

EXTRUSION-FILL METHOD OF PRODUCING AN ELASTOMERIC SPRING

J. Robert Dieckmann; Michael L. Lauber, both of Akron, Ohio, and Mark R. Roodvoets, Spartanburg, S.C., assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Sep. 15, 1983, Ser. No. 532,417
Int. Cl.[4] B29C *25/00*
U.S. Cl. 264—150 **3 Claims**



1. In the method of producing an elastomeric spring having an outer reinforced sleeve, the steps of

(1) providing a reinforced elastomer layer against the inner wall of a mold having a closed end;

(2) placing the mold coaxially with and surrounding a filler means;

(3) filling the mold from its closed end with elastomer while

(4) causing the mold and filler means to separate progressively axially;

(5) severing the fill at the open end of the mold;

(6) capping the mold; and

(7) vulcanizing the fill and layer.

4,541,979

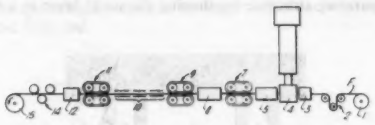
PROCESS AND APPARATUS FOR MANUFACTURING OPTICAL CABLE ELEMENTS

Edward I. Cooke, Addington; Arthur J. Pinnington, Widnes, and Charles A. Smeatham, Chester, all of England, assignors to BICC plc, London, England

Filed Dec. 20, 1982, Ser. No. 451,649
Claims priority, application United Kingdom, Dec. 22, 1981, 8138545
Int. Cl.[4] B29F *3/10*
U.S. Cl. 264—174 **9 Claims**

1. A method of manufacturing a tube of polymeric material, which method comprises extruding a tube of polymeric material; drawing down the extruded tube of polymeric material to reduce its internal diameter; causing the drawn-down tube to travel in the direction of its length through at least one elon-

gate oven; injecting a gas, which will have no deleterious effect on, and which is at a temperature sufficient to effect annealing of, the drawn-down tube, into the oven at at least one position intermediate of its ends; and directing the injected



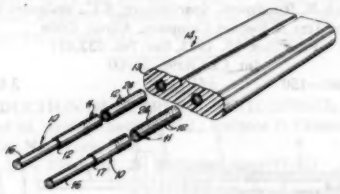
hot gas on to the advancing drawn-down tube at a plurality of positions spaced along the length of the oven in such a way that turbulent flow and substantially even distribution of hot gas is provided around the advancing drawn-down tube.

4,541,980

METHODS OF PRODUCING PLASTIC-COATED METALLIC MEMBERS

Albert S. Kiersarsky, Howard County; Earl S. Sauer, Baltimore County; William C. Vesperman, Howard County, and Max K. Wilson, Baltimore, all of Md., assignors to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Jan. 9, 1984, Ser. No. 569,532
Int. Cl.[4] B05D *1/24, 1/26, 1/36, 5/02*
U.S. Cl. 264—174 **11 Claims**



1. The method of forming a relatively-stable, texturized, discontinuous coating of adhesion sites on at least a portion of the surface of a metallic member to be coated which includes the steps of coating the portion of the surface of the metallic member to be coated with particles of unplasticized plastic material, and heating the particles of unplasticized plastic material for a time and at a temperature sufficient to melt the portions of the particles contacting the metallic member to cause the portions of the particles to undergo controlled degradation and to adhere to the surface of the metallic member, and thus to form a relatively stable, texturized, discontinuous coating of adhesion sites on the desired portion of the surface of the metallic member and applying a coating of a molten composition of plasticized plastic to the discontinuous coating.

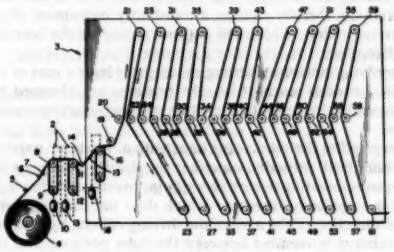
9. The method of making insulated wire which comprises the steps of supplying indefinite lengths of drawn, copper-clad steel-cored conductors of approximately 0.038 inch in diameter; preheating the conductors to a predetermined temperature within a specific temperature range of approximately 650° F. to 675° F.; utilizing ionized air flowing at approximately 350–400 standard cubic feets/per hour and being charged at approximately 35–38 kilovolts to fluidize and to generate a cloud of irregularly-shaped, electrostatically-charged particles of unplasticized PVC resin approximately 75 microns in size, and having an inherent viscosity of approximately 0.7 to 0.9; advancing the preheated conductors through the cloud of electrostatically-charged particles of unplasticized PVC resin at approximately 575–600 ft. per minute; maintaining said conductors at a relative potential with respect to the charged particles of unplasticized PVC resin to cause the particles of unplasticized PVC resin to deposit on and adhere to approximately 50 percent of the surfaces of the conductors in relatively spaced relationships with respect to each other; simultaneously, as a result of the heat in the preheated conductors, causing the portions of the particles of unplasticized PVC resin, contacting the conductors to melt, to undergo controlled degradation and to adhere to the surfaces of the conductors, and thus to form relatively-stable, texturized, discontinuous coatings of adhesion sites on approximately 50 percent of the surfaces of the conductors while leaving interdispersed surfaces over the remaining approximately 50 percent of the surface of the conductor exposed; and extruding a composition containing plasticized PVC resin over the conductors to form an insulating covering while maintaining the conductors in predetermined spaced relationship and while maintaining the temperature thereof substantially within the specifified temperature range of approximately 650° F. to 675° F., the temperature being sufficient to develop an unexpectedly-superior, relatively-stable, controlled, adhesive bond with the adhesion sites and the interdispersed exposed portions of the surfaces of the conductors, the magnitude of the adhesive bond being controlled to be consistently within a range of approximately 20 to 25 pounds force so that relative movement of the insulating covering axially of the conductors within predetermined stresses is prevented.

4,541,981

METHOD FOR PREPARING A UNIFORM POLYOLEFINIC MICROPOROUS HOLLOW FIBER

James J. Lowery, Charlotte, N.C.; Neil D. Plotkin, Scotch Plains, N.J., and Jack Robinson, Waxhaw, N.C., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 349,795, Feb. 18, 1982, Pat. No. 4,405,688. This application Jun. 13, 1983, Ser. No. 504,013
Int. Cl.[4] B29D *23/04*
U.S. Cl. 264—209.1 **5 Claims**



1. A process for preparing a uniform polyolefinic microporous hollow fiber comprising the steps of:

(a) melt spinning hollow non-porous precursor fiber in a substantially vertically upward direction from a polyolefinic resin at a temperature of about 10 to 90° C. above its crystalline melting point;

(b) spin-orienting said hollow non-porous precursor fiber by drawing said hollow non-porous precursor at a draw down ratio of at least about 10 while quenching said hollow non-porous precursor fiber with a substantially symmetrical flow of quenching medium; annealing the precursor fibers at a temperature between about 50° C. and less than 165° C. for a period of about 0.5 second to about 24 hours;

(c) cold stretching the non-porous precursor hollow fibers in the direction of their length at a temperature greater than the glass transition temperature of the precursor fiber and not greater than about 100° C.;

(d) Hot stretching the annealed cold stretched hollow fibers in the same direction of cold stretch at a temperature above the cold stretching temperature and below the melting point of the polymeric material to achieve a total degree of combined stretching of from about 80 to 200%,

said cold and hot stretching having an extension ratio of from about 1:3 to about 1:20 and a strain rate of from about 10 to about 200%/minute; and heat setting the resulting hot stretched fibers of step (e) at a temperature within the range of from about 70° C. below the crystalline melting point of the polymer to less than the crystalline point of the polymer for at least about one second under conditions such that the fiber relaxes from about 0 to about 50% of its stretched length.

4,541,982

PROCESS AND APPARATUS FOR FORMING AND REARRANGING PARTIAL STREAMS OF MOLTEN MATERIALS PROCESSED IN AN EXTRUDER FOR MAKING THERMOPLASTIC AND/OR ELASTOMERIC PRODUCTS

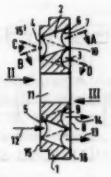
Hartmut Upmeier, Lengerich of Westphalia, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Dec. 5, 1983, Ser. No. 558,357

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1982, 3245084; May 11, 1983, 3317347

Int. Cl.⁴ B29D *7/22*

U.S. Cl. 264—349 **15 Claims**



1. A process of dividing and rearranging a stream of molten material which has a peripheral boundary layer and which is processed in an extruder for making thermoplastic and elastomeric products, said process comprising the steps of: dividing the molten stream into sector-like partial streams such that each of said partial streams includes a respective strip of the peripheral boundary layer of the molten stream; simultaneously causing adjacent ones of said partial streams to flow radially inwardly and radially outwardly, respectively; and recombining the partial streams in a different relation to each other in two approximately concentric annular regions with adjacent strips of the initial boundary layer located in peripheral and interior portions, respectively, of the recombined molten stream.

3. Apparatus for dividing and rearranging a stream of molten material in an extruder wherein the molten stream has a peripheral boundary layer, said apparatus comprising: at least one annular distributing disc provided on an entrance side with an annular series of openings for dividing the molten stream into sector-like partial streams each including a respective strip of the peripheral boundary layer of the molten stream, and being provided on an exit side with two approximately concentric annular series of openings; adjacent ones of the entrance openings of the disc being connected to respective ones of the exit openings of the disc by passages in the form of bores succeeding the entrance openings and extending through the disc radially inwardly and radially outwardly, respectively, such that the partial streams flow through the bores in the disc and recombine back into a molten stream on the exit side of the disc in a different relationship in two approximately concentric annular regions with adjacent strips of the initial peripheral boundary layer located in peripheral and interior portions, respectively, of the recombined molten stream.

4,541,983

PREPARING HEAT RESISTANT HEAT SHRINKABLE FILMS

Joseph C. Hsu; Donald W. Vought, both of Neenah, and George H. Walbrun, Menasha, all of Wis., assignors to American Can Company, Greenwich, Conn.

Division of Ser. No. 308,950, Oct. 5, 1981, abandoned. This application Nov. 10, 1983, Ser. No. 538,558

Int. Cl.⁴ B29D *7/24*

U.S. Cl. 264—514 **1 Claim**

1. A process for making a three layer heat shrinkable film, said process comprising the steps of:

(a) coextruding a three layer tubular tape having a first inner layer of ionomer having two surfaces, a second layer of a vinylidene chloride copolymer having two surfaces, and having one of said surfaces on said second layer on one said surface of said first layer, and a third outer layer on the other said surface of said second layer, the composition of said third layer being a blend of an ionomer and an EVA copolymer, wherein the EVA content of said blend is no greater than 20% by weight, the vinyl acetate content of said EVA is at least 22 percent, and the vinyl acetate content of said blend is at least 4.5% by weight;

(b) cooling said tape below the crystalline melting temperature of each of said three layers;

(c) reheating said tape to a temperature of about 195°–205° F.; and

(d) orienting said tape to form a film by blowing a bubble in the heated tape, providing an appropriate draw to said film to provide an oriented film having normally balanced shrink properties, and cooling said blown and drawn film

whereby free shrink of said film at 160° F. is about 20%–26% and at 180° F. is about 42%–45%, and shrink force at 160° F. is 160–219 grams per inch and at 180° F. is 160–188 grams per inch.

4,541,984

GETTER-LUBRICANT COATING FOR NUCLEAR FUEL ELEMENTS

David N. Palmer, Tolland, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Sep. 29, 1982, Ser. No. 427,242

Int. Cl.⁴ G21C *3/06*

U.S. Cl. 376—415 **7 Claims**

1. A nuclear fuel element comprising a nuclear fuel material, a fuel cladding containing said nuclear fuel material and a coating between said nuclear fuel material and said fuel cladding which is adhered to at least one of said fuel material and said fuel cladding, said coating comprising:

a. a lubricating matrix comprising a material selected from the group consisting of graphite and boron,

b. a getter intercalated and chemically bound into said lubricating matrix, said getter selected from the group consisting of zirconium, yttrium, titanium, cerium, cobalt, nickel, chromium and the compounds, alloys and mixtures thereof, and

c. a binder to form and hold said intercalated lubricating matrix in a continuous film.

4,541,985

PROCESS FOR THE PREPARATION OF A COMPOSITE MATERIAL AND COMPOSITE MATERIAL OBTAINED BY THIS PROCESS

Jacques Devillard, Saint Ismier, and Jean Granier, Seyssinet, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jul. 26, 1982, Ser. No. 402,131

Claims priority, application France, Aug. 6, 1981, 81 15275

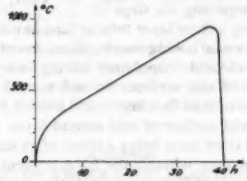
Int. Cl.⁴ B22F *1/04*

U.S. Cl. 419—10 **16 Claims**

1. A process for the preparation of a composite material having an inorganic matrix and inclusions of carbon-containing

material distributed in said matrix comprising the following steps:

(a) mixing an inorganic frittable powder with a liquid or viscous resin which can be transformed into vitreous carbon by heat treatment, said inorganic powder being selected from the group consisting of metals, metal alloys, oxides, carbides, nitrides, cermets and mixtures thereof, said resin being obtained from phenol and aldehyde reactants, the mixture of resin and inorganic powder thus obtained containing at the most 20% by weight of resin,



(b) subjecting the mixture of resin and inorganic powder to a first heat treatment performed at a temperature at the most equal to 350° C. for 1 to 3 hours such that the resin is hardened by crosslinking or polycondensation, and

(c) subjecting the thus obtained hardened product to a second heat treatment performed under vacuum or in a neutral atmosphere at a temperature of 600° to 1100° C. for 30 to 50 hours for transforming the resin into vitreous carbon and thus forming said vitreous carbon inclusions.

4,541,986

PROCESS FOR DEODORIZING SLUDGE

Heinrich Schwab, Frankfurt, and Werner Kaschke, Aschuffenberg, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 119,973, Feb. 8, 1980, abandoned. This application Mar. 16, 1984, Ser. No. 589,851

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1977, 2757561

Int. Cl.⁴ C02F *11/00*; F01C *1/30*

U.S. Cl. 422—5 **20 Claims**

1. A process of deodorizing a waste water sludge containing fermentation causing microorganism according to claim 17 consisting essentially of treating the waste water sludge at a temperature of 5 to 40° C. and a pH of 5.0 to 7.0 with an active oxygen developing compound selected from the group consisting of alkali metal chlorites and alkaline earth metal chlorites in an amount sufficient to temporarily delay the fermentation process caused by such microorganisms.

4,541,987

TEST DEVICE FOR DETECTING OCCULT BLOOD

Philip A. Guadagno, Vidor, Tex., assignor to Helena Laboratories Corporation, Beaumont, Tex.

Filed Sep. 29, 1983, Ser. No. 537,213

Int. Cl.⁴ G01N *21/78, 33/72*

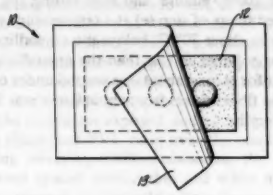
U.S. Cl. 422—56 **6 Claims**

1. A test kit for detecting the existence of blood in an aqueous solution comprising:

first and second layers secured together to form a pad;

a solid water soluble guaiacolsulfonate confined to at least one test location formed between the first and second layers; and

a solid water soluble monopersulfate compound comprised of two moles of potassium monopersulfate, one mole of potassium hydrogen sulfate and one mole of potassium sulfate, said monopersulfate compound mixed with said guaiacolsulfonate at said test location, whereby any blood in the aqueous solution catalyzes the reduction of said monopersulfate compound with subsequent oxidation of



the guaiacolsulfonate causing the latter to undergo a chromogen reaction.

4,541,988

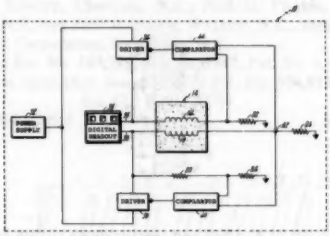
CONSTANT TEMPERATURE CATALYTIC GAS DETECTION INSTRUMENT

John E. Tozier, Wexford; Abraham Anouchi, Pittsburgh, and Richard Critchlow, Cheswick, all of Pa., assignors to Bacharach Instrument Company, Pittsburgh, Pa.

Filed Dec. 13, 1983, Ser. No. 560,784

Int. Cl.⁴ G01N *27/16*

U.S. Cl. 422—94 **5 Claims**



1. A constant temperature catalytic gas detection instrument for measuring concentrations of an unknown gas, comprising:

gas sensor means having a reference element and an active element, both of which are formed from a material having a resistivity that varies as a function of temperature;

control means connected to said gas sensor means for sensing variations in the resistance of said active element and for regulating the current flowing through the active element to maintain the resistance of the active element relatively constant, and said control means responding to the presence of said unknown gas by causing the resistivity of said reference element to vary by regulating the current flow through the reference element as a function of the current flow through the active element;

power supply means for supplying a source of operating potential; and

indicator means connected to said gas sensor means for measuring a change in the difference between a potential across said reference element and a potential across said active element to provide an indication of the concentration of said unknown gas.

4,541,989

PROCESS AND DEVICE FOR THE GENERATION OF OZONE VIA THE ANODIC OXIDATION OF WATER

Peter C. Foller, Berkeley, Calif., assignor to Oxytech, Inc., Cupertino, Calif.

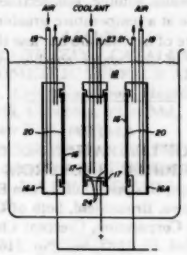
Filed Jan. 27, 1983, Ser. No. 461,575

Int. Cl.⁴ C01B *13/11*; B01J *19/08*

U.S. Cl. 422—186.07 **8 Claims**

1. An electrolytic cell for the production of ozone compris-

ing: at least one anode comprising a material selected from glassy carbon, lead dioxide and platinum; at least one air cathode for reduction of oxygen; and aqueous electrolyte comprising tetrafluoroborate anions wherein said anode and said cath-



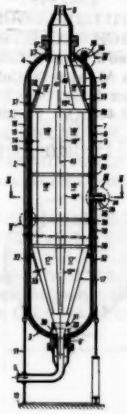
ode are in contact with said electrolyte, and air is in contact with said cathode whereby during operation of said cell ozone is formed by oxidation of water at the surface of said anode and water is formed by reduction of oxygen at the surface of said cathode.

4,541,990

VESSEL

Paul Mitterbacher, Gallneukirchen, Austria, assignor to Voest-Alpine Aktiengesellschaft, Austria

Filed Nov. 30, 1983, Ser. No. 556,564
Claims priority, application Austria, Dec. 2, 1982, 4380/82
Int. Cl.⁴ B01J *19/02*
U.S. Cl. 422—242 **16 Claims**



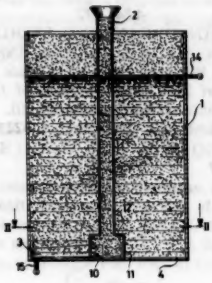
1. In a vessel, such as a pressure vessel to be used in hydration or cracking plants, of the type including an outer wall, an inner wall arranged at a distance from said outer wall within said vessel and leaving an annular space relative to said outer wall, said inner wall being supported on said outer wall so as to allow for relative movements, the improvement of the inner wall comprising individual annular sections sequentially arranged in an axial direction of said vessel, means for supporting each of said annular sections on said outer wall, independently of the remaining ones of said annular sections, and an expansion joint bridging neighboring annular sections.

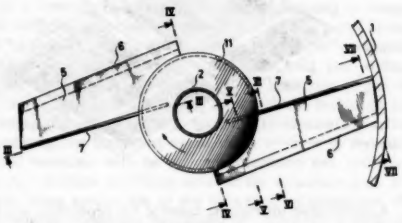
4,541,991

MEANS FOR PROCESSING A SOLID GRAVEL LIKE MATERIAL WITH A FLUID

Harald Krogsrud, Gjettum, Norway, assignor to Elkem a/s, Oslo, Norway

Division of Ser. No. 224,918, Jan. 14, 1981, Pat. No. 4,382,073.
This application Jan. 10, 1983, Ser. No. 457,003
Claims priority, application Norway, Jan. 18, 1980, 800118
Int. Cl.⁴ B01D *11/02*
U.S. Cl. 422—269 **9 Claims**





1. Apparatus for treating solid free flowing granular mineral materials with a leaching liquid comprising:

(a) a tank having a bottom portion and a top portion;

(b) a centrally arranged vertical tube rotatably disposed in the tank for rotation therein;

(c) said tube having a first at least one opening in the top portion thereof at the top portion of said tank and at least one second opening, each said second opening located at a lower portion of said tube adjacent the bottom portion of said tank wherein said first opening receives a supply of solid granular mineral material which flows down through the tube and out of each said second opening and into the bottom portion of said tank;

(d) at least one lifting plate having a front side and a rear side, each said lifting plate rigidly affixed to said tube for rotation therewith each said lifting plate being located in the bottom portion of said tank and the rear side of each said lifting plate being positioned adjacent to at least one of said second openings and forward of said second opening with respect to the direction of rotation of said tube and extending outwardly away from said tube, each said second opening having a lifting plate associated therewith;

(e) the rear side of each said lifting plate with respect to the direction of rotation having an inclined face that slopes up and backwardly away from the direction of rotation to form a space thereunder whereby granular mineral material in said tube will flow outwardly from each said second opening and into the space beneath each said lifting plate provided by rotation thereof to supply from said space a layer of granular material in said tank;

(f) the front side of each said lifting plate having a inclined

surface whereby said granular material in said tank is lifted up and deposited on top of the layer of granular material supplied from the space beneath the rear side of said lifting plate thereby lifting said granular material up through said tank;

(g) means for introducing leaching liquid at the top portion of the tank and means for withdrawing said liquid at the bottom portion of the tank; and

(h) outlet opening means in the top portion of said tank for removing the treated granular material.

4,541,992

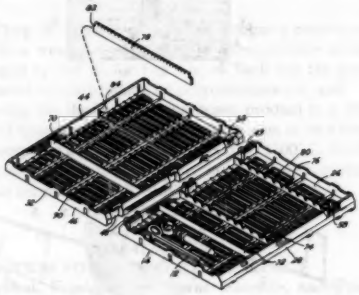
APPARATUS FOR ORGANIZING, STERILIZING, AND MAINTAINING MEDICAL/DENTAL INSTRUMENTS

Charles R. Jerge, Winston-Salem, N.C.; Bruce Frankel, Northbrook, and Karl Zoll, Glenview, both of Ill., assignors to Hu-Friedy Manufacturing Co., Chicago, Ill.

Filed Aug. 10, 1983, Ser. No. 522,451

Int. Cl.⁴ A61B *19/02*

U.S. Cl. 422—300 **11 Claims**



1. A sterilizable instrument cassette for repeatedly cycling through a process of use and sterilization, and in which instruments are removably and replaceably kept, comprising:

a tray formed of sterilization heat resistant plastic perforated with a plurality of sterilization openings;

a cover formed of sterilization heat resistant plastic perforated with a plurality of sterilization openings;

means on the tray and cover joining the cover to the tray, the cover and tray thereby being movable relative to each other to and from open and closed positions, the joining means being formed of sterilization heat resistant plastic;

instrument compartment rails fastened to the cover and the tray at corresponding locations, thereby defining instrument compartments within the cassette, when closed, the compartment rails being formed of sterilization heat resistant plastic; and

instrument locating and retaining rails fastened within said cassette interior and within the instrument compartments, the locating and retaining rails including thereon spaced instrument holders adapted to releasably hold instruments in spaced relation to each other and the tray and the cover within the instrument compartments, the locating and retaining rails being formed of sterilization heat resistant plastic.

4,541,993

PROCESS FOR THE SULFATIZATION OF NON-FERROUS METAL SULFIDES

Daniel A. Norrgran, Tucson, Ariz., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Continuation of Ser. No. 365,152, Apr. 5, 1982,. This application Nov. 21, 1983, Ser. No. 553,635

Int. Cl.⁴ C01G *53/10, 51/10, 3/10, 9/06*

U.S. Cl. 423—27 **7 Claims**

1. A process for the sulfatization of at least one non-ferrous metal sulfide selected from the group consisting of copper, nickel, cobalt and zinc sulfides which comprises mixing alkali metal carbonate or bicarbonate with sulfide mineral containing said metal sulfide and converting a high percentage of said metal sulfide into water soluble, non-ferrous metal sulfate by roasting the mixture at a temperature greater than the decomposition temperature of iron sulfate but less than the decomposition temperature of the water soluble, non-ferrous metal sulfate.

4,541,994

METHOD OF LIBERATING NICKEL- AND COBALT-ENRICHED FINES FROM LATERITE

E. Harris Lowenhaupt, Gasquet, Calif.; John E. Litz, Lakewood, and Dennis L. Howe, Broomfield, both of Colo., assignors to California Nickel Corporation, Crescent City, Calif.

Filed Jul. 22, 1983, Ser. No. 516,237

The portion of the term of this patent subsequent to Sep. 17, 2002, has been disclaimed.

Int. Cl.⁴ C01G *53/00, 55/00;* **C22B** *3/00*

U.S. Cl. 423—150 **11 Claims**

1. A method of extracting nickel and cobalt from nickel; cobalt and magnesium-containing laterite ore comprising classifying said ore into a coarse, magnesium-rich fraction and a less coarse cobalt- and nickel-rich fraction, solubilizing said nickel and cobalt from said less coarse fraction into a pregnant liquor by a primary high pressure acid leach at a temperature of from about 200° C. to about 300° C., neutralizing said pregnant liquor and recovering said nickel and cobalt from said neutralized liquor, the improvement comprising leaching said coarse, magnesium-rich fraction at a temperature of below about 200° C. to liberate magnesium-depleted, nickel- and cobalt-enriched fines, separating said fines from the remainder of said coarse fraction and advancing said fines to said high pressure leach.

4,541,995

PROCESS FOR UTILIZING DOUBLY PROMOTED CATALYST WITH HIGH GEOMETRIC SURFACE AREA

Gwan Kim, Olney; Carmo J. Pereira, Columbia; Louis Hegedus, Rockville, and James M. Maselli, Columbia, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 542,440, Oct. 17, 1983, Pat. No. 4,510,262. This application Nov. 13, 1984, Ser. No. 670,511

Int. Cl.⁴ B01D *53/36*

U.S. Cl. 423—213.5 **7 Claims**

1. A method of converting noxious components of exhaust gas to innocuous entities, said noxious components comprising carbon monoxide, hydrocarbons, and nitrogen oxides, which comprises contacting said gases with a catalyst comprising a solid, transitional alumina extrudate support structure having a cylindrical, hollow annular configuration with internal reinforcing vanes, a nitrogen surface area of at least 50 m^2/g; a diameter of up to about 6.5 mm; an aspect ratio of the length to the diameter of from about 1 to 5; a geometric surface area of at least 25% greater than a hollow tube of the same inside and outside diameter; a porosity of at least 0.3 cm^3/g; a surface area per reactor volume of at least 5 cm^2/cm^3, and deposited directly on the support structure without having any washcoat

present from about 1–10 wt. % ceria, an alkali metal promoter expressed as the wt. % of the oxide M_2O in an effective amount up to about 5% and a catalytically-effective amount of one or more platinum group metals.

4,541,996

PROCESS FOR UTILIZING CATALYST WITH HIGH GEOMETRIC SURFACE AREA

Carmo J. Pereira, Columbia; Louis Hegedus, Rockville, and James M. Maselli, Columbia, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 542,346, Oct. 17, 1983, Pat. No. 4,510,261. This application Nov. 13, 1984, Ser. No. 670,192

Int. Cl.[4] B01D *53/36*

U.S. Cl. 423—213.5 7 Claims

1. A method of converting noxious components of exhaust gas to innocuous entities, said noxious components comprising carbon monoxide, hydrocarbons, and nitrogen oxides, which comprises contacting said gases with a catalyst comprising a solid, transitional alumina extrudate support structure having a cylindrical, hollow annular configuration with internal reinforcing vanes, a nitrogen surface area of at least 50 m^2/g; a diameter of up to about 6.5 mm; an aspect ratio of the length to the diameter of from about 1 to 5; a geometric surface area of at least 25% greater than a hollow tube of the same inside and outside diameter; a porosity of at least 0.3 cm^3/g; a surface area per reactor volume of at least 5 cm^2/cm^3, and a catalytically-effective amount of one or more platinum group metals deposited directly on the support structure without having any washcoat present.

4,541,997

PROCESS OF REDUCING THE OXYGEN CONTENT IN GAS MIXTURES

Gustaf F. Bengt, Torslanda, Sweden, assignor to EKA AB, Surte, Sweden

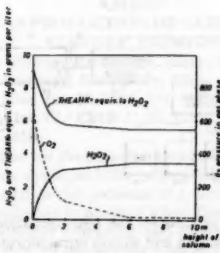
PCT No. PCT/SE82/00228, § 371 Date Feb. 16, 1983, § 102(e) Date Feb. 16, 1983, PCT Pub. No. WO83/00139, PCT Pub. Date Jan. 20, 1983

PCT Filed Jun. 28, 1982, Ser. No. 467,478

Claims priority, application Sweden, Jul. 8, 1981, 8104242

Int. Cl.[3] C01B *15/02*

U.S. Cl. 423—219 6 Claims



1. A process of reducing the oxygen content in a gas mixture to 0.0–1.5% by volume and simultaneously producing hydrogen peroxide in high yield, comprising, contacting the gas mixture with a solution containing anthrahydroquinone derivatives capable of being oxidized with molecular oxygen to form hydrogen peroxide, the supply of oxygen being controlled such that the supplied amount of oxygen is at least 10% lower than the amount stoichimetrically corresponding to the supplied amount of anthrahydroquinone derivative on quantitive hydrogen peroxide formation, and the oxygen supply being so controlled in relation to the supply of anthrahydroquinone derivative that the oxygen pressure in the gas mixture at the surface of contact between the solution and the gas mixture is not higher than 100 millibars when the hydrogen peroxide concentration is lower than 100 millimols per liter.

4,541,998

THIOCYANATE TO PREVENT THE FORMATION OF THIOSULFATE IN THE OXIDATION OF HYDROGEN SULFIDE

Günter Weber, Linden, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 406,805, Aug. 10, 1982, abandoned. This application Oct. 12, 1983, Ser. No. 569,097

Claims priority, application Fed. Rep. of Germany, May 26, 1982, 3219762

Int. Cl.[4] B01D *53/34;* C01B *17/04*

U.S. Cl. 423—226 13 Claims

1. In a continuous process comprising oxidizing hydrogen sulfide absorbed in an aqueous alkaline scrubbing agent having a pH of 8–9 and prepared by admixing in water a vanadate oxidizing agent, anthraquinonedisulfonic acid and sodium carbonate, the weight proportion of the vanadium to the anthraquinonedisulfonic acid being about 1:2, the hydrogen sulfide being thereby oxidized principally to elementary sulfur; regenerating the scrubbing agent in an oxidizer to reoxidize reduced vanadate with an oxygen containing gas; and recycling the resultant scrubbing agent to the scrubbing step, said process being susceptible to the formation of thiosulfate, the improvement consisting essentially of providing a sufficient concentration of a source of thiocyanate in the scrubbing agent to prevent any build-up of thiosulfate after at least 1,000 hours of operation, which build-up would otherwise occur in the absence of the addition of said source of thiocyanate.

4,541,999

METHOD FOR REMOVING ACIDIC COMPONENTS INCLUDING NITROGEN OXIDE FROM WASTE GASES

Horst Bechthold, Erftstadt-Friesheim; Heinz J. Fischer, Neunkirchen-Seelscheid, and Wolfgang Schulte, Monheim, all of Fed. Rep. of Germany, assignors to Backau-Walther Aktiengesellschaft, Grevenbroich, Fed. Rep. of Germany

Filed May 26, 1983, Ser. No. 498,487

Claims priority, application Fed. Rep. of Germany, May 29, 1982, 3220403

Int. Cl.[4] C01B *21/00, 17/00, 21/48;* C01C *1/24*

U.S. Cl. 423—235 14 Claims

1. A method of removing acid components of waste gases which are emitted from a furnace or other combustion device and comprise oxides of sulfur and nitrogen, comprising the steps of

(a) contacting the waste gases with a first absorbing fluid comprising NH_3 in a first absorbing stage to produce from the sulfur oxides a first solution which is removable from the waste gases and comprises sulfate and sulfite salts including ammonium sulfate and ammonium sulfite;

(b) oxidizing the first solution to produce an oxidized first solution predominantly comprising sulfate salts;

(c) contacting the waste gases, after removal of the first solution, with an oxidizing agent to produce from the oxides of nitrogen a gaseous stream containing nitrogen dioxide;

(d) contacting the gaseous stream with a second absorbing

fluid containing NH_3 in a second absorbing stage to produce from the nitrogen dioxide a second solution which is removable from the gaseous stream and comprises nitrate and nitrite salts including ammonium nitrate and ammonium nitrite;

(e) oxidizing the second solution to produce therefrom an oxidized second solution predominantly containing nitrate salts; and

(f) wherein the oxidized solutions are dried.

4,542,000

METHOD FOR TREATING GAS STREAMS

Jeffery C. Alexander, Essex, and Karim Zahedi, Newton, both of Mass., assignors to EFB, Inc., Woburn, Mass.

Filed Jan. 30, 1984, Ser. No. 575,148

Int. Cl.[4] C01B *17/00*; C09K *3/00*

U.S. Cl. 423—244 **15 Claims**

1. A metod of treating a gas stream containing a gaseous sulfur oxide constituent to be removed, comprising providing a granular bed filter, supplying to the bed of said filter granules of gravel having deposited thereon a coating of an alkali sorbent material reactive with said gaseous constituent, and passing said gas stream through said bed for contacting the gas stream with said sorbent material and for reacting said sorbent material with said gaseous constituent to substantially remove that constituent from said gas stream.

4,542,001

FINE PARTICULATE CRYSTALLINE ALUMINUM ORTHOPHOSPHATE AND METHOD FOR PREPARING SAME

Shinji Iino; Kensaku Maruyama; Motoi Takenaga; Kazuhiko Muramoto, all of Shimonoseki, and Mitsutomo Tsuhako, Itami, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Japan

Filed Aug. 22, 1983, Ser. No. 525,606

Int. Cl.[4] C01B *25/26*

U.S. Cl. 423—311 **6 Claims**

1. A method for preparing a fine particulate $AlPO_4$ which comprises reacting an aqueous phosphoric acid solution with an aluminum compound selected from the group consisting of an aluminum hydroxide and an aluminum oxide, wherein the molar ratio of phosphoric acid to the aluminum compound is in the range of 0.8 to 1.8 in terms of P_2O_5/Al_2O_3, said reaction being performed under stirring at an elevated temperature in an organic solvent capable of forming two phases with water, said solvent having a boiling point not lower than 60° C. under atmospheric pressure, and being present in at least two times the weight ratio, based on the amount of Al_2O_3, of the aluminum compound.

4,542,002

SILICATES WITH HIGH ION EXCHANGE CAPACITY DERIVED FROM SEPIOLITE AND PROCESSES FOR THEIR PRODUCTION

Avelino C. Corma; Ampero C. Mifsud, and Joaquin P. Perez, all of Madrid, Spain, assignors to Synthesis Engineering Ltd., Canada

Filed Feb. 28, 1983, Ser. No. 470,601

Claims priority, application Spain, Mar. 1, 1982, 510013

Int. Cl.[4] C01B *33/24*

U.S. Cl. 423—331 **20 Claims**

1. A process for obtaining a silicate derived from a sepiolite comprising reacting said sepiolite with a base selected from the group consisting of alkali metal hydroxides, alkaline earth metal hydroxides and ammonium hydroxide, in the presence of a polar liquid selected from the group consisting of water, alcohols and mixtures thereof, at a temperature in the range from about 100° C. to about 400° C. and for a period sufficient to increase the ion exchange capacity of the sepiolite to at least 100 meq. per 100 g with respect to potassium or magnesium, and recovering a silicate with said ion exchange capacity.

14. A silicate having an ion exchange capacity with respect to magnesium of at least about 100 meq. per 100 g and conforming to the general formula

$$Si_yW_wM_zA_xO_{30}(OH)_4$$

wherein

W is selected from the group consisting of aluminum, magnesium, iron, nickel, manganese and mixtures thereof;

M is a divalent metal selected from the group consisting of the alkaline earth metals, and mixtures thereof;

A is selected from the group consisting of alkali metals, ammonium ion and mixtures thereof;

y is from about 10 to about 12;

w is from about 3.5 to about 8;

x is from about 0 to about 2;

z is from greater than zero up to about 4; and

the molar ratio w:y is from about 0.29:1 up to about 0.8:1.

4,542,003

CHEMICAL TREATMENT OF SAND

Paul Watkins, and John W. Scott, both of Kendal, England, assignors to British Industrial Sand Limited, Redhill, England

Filed Jun. 27, 1984, Ser. No. 625,011

Claims priority, application United Kingdom, Jun. 29, 1983, 8317669

Int. Cl.[4] C01B *33/18*

U.S. Cl. 423—340 **12 Claims**

1. A process for treating sand which includes one or more stages in which sand is mixed with a hydrosulphite selected from the group consisting of zinc hydrosulphite, sodium hydrosulphite and mixtures thereof and an acid selected from the group consisting of sulphuric acid, hydrofluoric acid and mixtures thereof and the resulting slurry is agitated at ambient temperature in an atmospheric oxygen-free environment.

4,542,004

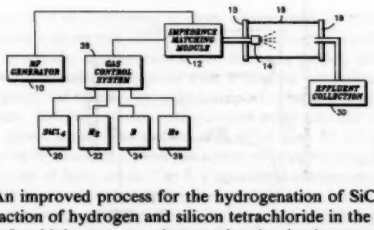
PROCESS FOR THE HYDROGENATION OF SILICON TETRACHLORIDE

Kalluri R. Sarma, Mesa, and Charles S. Chanley, Scottsdale, both of Ariz., assignors to Solavolt International, Houston, Tex.

Filed Mar. 28, 1984, Ser. No. 594,167

Int. Cl.[4] C01B *33/107*

U.S. Cl. 423—342 **8 Claims**



1. An improved process for the hydrogenation of $SiCl_4$ by the reaction of hydrogen and silicon tetrachloride in the presence of a high pressure plasma wherein the improvement comprises: adding a catalyst comprising boron to said reaction.

4,542,005

PROCESS FOR PREPARING SILICON HYDRIDES

Iwao Tetsuya; Hirai Reiji, and Ashida Yoshinori, all of Takaishi, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

PCT No. PCT/JP82/00254, § 371 Date Mar. 8, 1983, § 102(e) Date Mar. 8, 1983, PCT Pub. No. WO83/00140, PCT Pub. Date Jan. 20, 1983

PCT Filed Jul. 6, 1982, Ser. No. 485,121

Claims priority, application Japan, Aug. 7, 1981, 56-105706

Int. Cl.⁴ C01B *33/04*

U.S. Cl. 423—347 **1 Claim**

1. A process for the preparation of silicon hydrides by reducing a silicon compound of the formula, Si_nX_{2n+2} in which n is an integer equal to or larger than 1 and the X's may be the same or different and represent halogen atoms, hydrogen atoms, alkoxy groups, alkyl groups, aryl groups or vinyl groups, the case of all X's being hydrogen atoms being excluded; with a mixture of an alkyl aluminum hydride and a trialkyl aluminum, said alkyl aluminum hydride having the formula R_2AlH in which R is an alkyl group of 1–10 carbon atoms; said trialkyl aluminum having the formula R_3Al in which R is an alkyl group of 1–10 carbon atoms; which comprises; adding to said mixture an aluminum halide compound of the formula, AlR_nX_{3-n} in which n represents 0, 1, or 1.5, X represents halogen atoms, and R represents an alkyl group having 1–10 carbon atoms, in an amount sufficient to convert at least 90 mol percent of the trialkyl aluminum to a dialkyl aluminum monohalide prior to the reduction of said silicon compound.

4,542,006

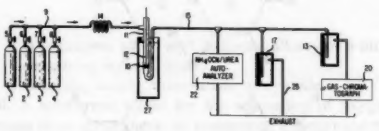
CATALYTIC PROCESS FOR THE PRODUCTION OF UREA AND AMMONIUM CYANATE

Rudolf J. H. Voorhoeve, Summit, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 217,562, Dec. 17, 1980, abandoned, which is a continuation of Ser. No. 776,787, Mar. 11, 1977, abandoned. This application Oct. 30, 1981, Ser. No. 316,690

Int. Cl.⁴ C01C *3/00, 3/14*

U.S. Cl. 423—365 **6 Claims**



1. The process comprising converting a mixture of gases, said mixture of gases comprising (1) an oxide of the composition NO_x where x is 1 or 2, (2) carbon monoxide and (3) a source of hydrogen, to a compound of the formula N_2H_4CO in the presence of a hydrogenation catalyst and collecting said compound.

4,542,007

METHOD FOR PRODUCTION OF CARBON BLACK AND START-UP THEREOF

Lawrence K. Murray, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 23, 1984, Ser. No. 633,694

Int. Cl.⁴ C01B *31/02*; C09C *1/48*

U.S. Cl. 423—450 **27 Claims**

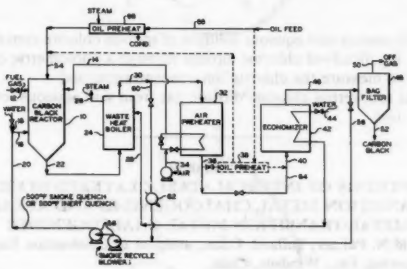
1. In a method for the manufacture of carbon black, wherein the combustion cycle, includes: sequentially, burning a carbonaceous material in the presence of a combustion-supporting gas under conditions to produce a hot, first, high temperature combustion effluent containing said carbon black; quenching said burning step, by introducing a quench fluid into said high temperature combustion, to produce a hot, second, high temperature combustion effluent; cooling said second, high temperature combustion effluent in at least two, indirect heat exchange steps, including at least two of:

(1) passing said second, high temperature combustion effluent in indirect heat exchange with water, to produce steam;

(2) passing said second, high temperature combustion effluent in indirect heat exchange with said combustion-supporting gas, to preheat said combustion-supporting gas;

(3) passing said second, high temperature combustion effluent in indirect heat exchange with a carbonaceous material, to preheat said carbonaceous material; and,

(4) passing said second high temperature combustion effluent in indirect heat exchange with water, to heat said water, to produce a hot, intermediate temperature combustion effluent between the first and the last of said heat exchange steps and a hot, low temperature combustion effluent downstream of said last of said heat exchange steps; withdrawing a part of said low temperature combustion effluent from a point downstream of said last of said heat exchange steps; recycling the thus withdrawn part of said low temperature combustion effluent to said



recycling step, as said quench fluid; and recovering said carbon black from the remainder of said low temperature combustion effluent, the improved method of starting up said production cycle, for the manufacture of carbon black comprising:

(a) withdrawing at least a part of said intermediate temperature combustion effluent, from a point between said first and said last of said heat exchange steps and upstream of the point at which said part of said low temperature combustion effluent is to be withdrawn during said production cycle;

(b) recycling the thus withdrawn intermediate temperature combustion effluent to said quenching step, as said quench fluid; and,

(c) beginning said production cycle, including, discontinuing said recycling of said intermediate temperature combustion effluent and substituting said recycling of said low temperature combustion effluent, when the temperature of said low temperature combustion effluent reaches a temperature near a predetermined quench temperature.

4,542,008

ELECTROCHEMICAL CHLORINE DIOXIDE PROCESS

Italo A. Capuano, Orange, and Diane L. DeFelice, North Haven, both of Conn., assignors to Olin Corporation, Cheshire, Conn.

Filed Oct. 3, 1983, Ser. No. 538,713

Int. Cl.⁴ C01B *11/02*

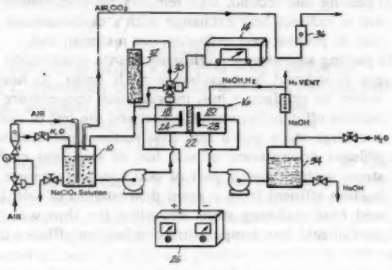
U.S. Cl. 423—477 **13 Claims**

1. A continuous process for the production of chlorine dioxide by the electrolysis of an aqueous solution of sodium chlorite which comprises:

(a) feeding an aqueous solution of sodium chlorite to the anode compartment of an electrolytic cell;

(b) electrolyzing said aqueous solution of sodium chlorite in said anode compartment of the electrolytic cell to produce an aqueous solution of sodium chlorite containing dissolved chlorine dioxide;

(c) removing said aqueous solution of sodium chlorite containing dissolved chlorine dioxide having a pH of from about 5 to about 8 from said anode compartment;



(d) passing said aqueous solution of sodium chlorite containing dissolved chlorine dioxide through a photometric cell to measure the chlorite ion concentration; and

(e) recovering chlorine dioxide gas from said aqueous solution.

4,542,009

SYNTHESIS OF INTERCALATABLE LAYERED STABLE TRANSITION METAL CHALCOGENIDES AND ALKALI METAL-TRANSITION METAL CHALCOGENIDES

David N. Palmer, Tolland, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 21, 1983, Ser. No. 487,158

Int. Cl.[4] **C01B** *19/04;* **B05D** *3/06;* **H01L** *7/36;* **C23C** *11/00*

U.S. Cl. 423—561 R **9 Claims**

1. A process for treating the surface of a transition metal substrate to form into the surface an intercalatable layered stable transition metal chalcogenide having the general formula MX_n where M is a transition metal selected from the group consisting of Ti, V, Cr, Fe, Zr and Nb; X is sulfur; and n is 2–3; which comprises:

ion implanting sulfur at an implantation energy in the range of about 150–200 kiloelectron volts and at a saturation dosage of about 10^{18} sulfur atoms/cm^2 into the suface of the transition metal substrate to a depth of about 1300–2200Å; and

annealing the sulfur-implanted substrate under a vacuum of from about 1×10^{-5} torr to about 1×10^{-6} torr at a temperature of from about 100° C. to about 300° C. for form about 8 hours to about 48 hours.

4,542,010

METHOD AND APPARATUS FOR PRODUCING OXYGEN AND NITROGEN AND MEMBRANE THEREFOR

Ian C. Roman, and Richard W. Baker, both of Bend, Oreg., assignors to Bend Research, Inc., Bend, Oreg.

Filed Jun. 30, 1982, Ser. No. 393,712

Int. Cl.[4] **C01B** *13/02*

U.S. Cl. 423—579 **36 Claims**

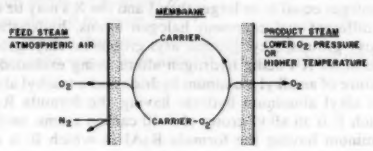
1. A process for the separation and purification of oxygen and nitrogen comprising:

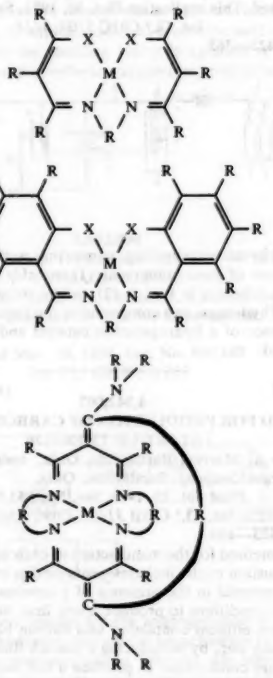
(a) bringing atmospheric air into contact with a membrane, said membrane separating said atmospheric air into a feed stream on one side of said membrane and a product stream on the other side of said membrane,

(b) maintaining the oxygen partial pressure on the product-stream side of said membrane at least approximately 10 mmHg lower than the oxygen partial pressure on the feed-stream side of said membrane,

(c) collecting oxygen from the product-stream side of said membrane and nitrogen from the feed-stream side of said membrane,

(d) said membrane comprising a membrane support which is a nonporous polymeric film or a microporous polymeric film selected from polysulfones, polyamides, regenerated cellulose, polyhalogenated hydrocarbons, polyesters, polyurethanes, polyolefins, polycarbonates, polysachharides, polyorganosilanes, and polyorganosiloxanes, said membrane support containing a solvent or solvent mixture, an axial base, and an oxygen carrier, said solvent or solvent mixture, axial base and oxygen carrier being in the liquid phase when present together, said solvent or solvent mixture being capable of dissolving the axial base and the oxygen carrier when they are present together, said axial base being capable of providing a coordinating atom to the oxygen carrier, and said oxygen carrier being a metal-containing complex having any of the structures





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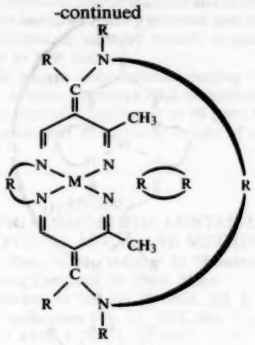
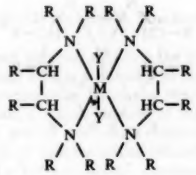
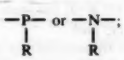




wherein

M is cobalt, iron, copper, nickel, manganese, ruthenium or rhodium;

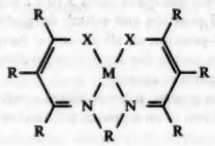
X is —O—, —S—,



R is hydrogen, alkyl, aryl, halogen, alkoxy or a nitrogen-containing moiety; and

Y is halide, nitrate, thiocyanate or cyanide.

20. A membrane useful for the separation of oxygen and nitrogen from atmospheric air comprising a membrane support which is a nonporous polymeric film or a microporous polymeric film selected from polysulfones, polyamides, regenerated cellulose, polyhalogenated hydrocarbons, polyesters, polyurethanes, polyolefins, polycarbonates, polysachharides, polyorganosilanes, and polyorganosiloxanes, said membrane support, a solvent or solvent mixture, an axial base and an oxygen carrier, said solvent or solvent mixture, axial base and oxygen carrier being in the liquid phase when present together, said solvent or solvent mixture being capable of dissolving the axial base and the oxygen carrier when they are present together, said axial base being capable of providing a coordinating atom to the oxygen carrier, and said oxygen carrier being a metal-containing complex having any of the structures



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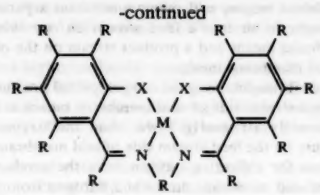
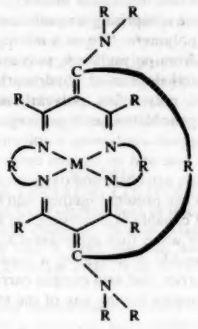
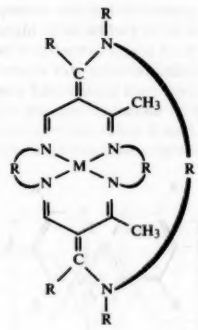
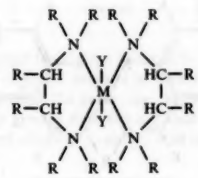




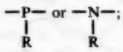




wherein

M is cobalt, iron, copper, nickel, manganese, ruthenium or rhodium;

X is —O—, —S—,



R is hydrogen, alkyl, aryl, halogen, alkoxy or a nitrogen-containing moiety; and

Y is halide, nitrate, thiocyanate or cyanide.

29. Apparatus for the separation and purification of oxygen and nitrogen comprising:

(a) membrane means,

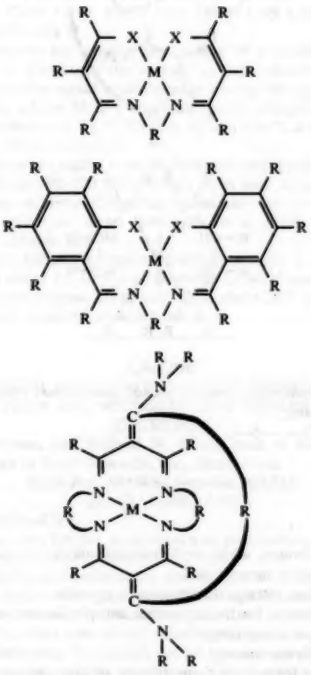
(b) means for bringing atmospheric air into contact with said

membrane means, said membrane means separating said atmospheric air into a feed stream on one side of said membrane means and a product stream on the other side of said membrane means,

(c) means for maintaining the oxygen partial pressure on the product-stream side of said membrane means at least approximately 10 mmHg lower than the oxygen partial pressure on the feed-stream side of said membrane means,

(d) means for collecting oxygen from the product-stream side of said membrane means and nitrogen from the feed-stream side of said membrane means;

(e) said membrane comprising a membrane support which is a nonporous polymeric film or a microporous polymeric film selected from polysulfones, polyamides, regenerated cellulose, polyhalogenated hydrocarbons, polyesters, polyurethanes, polyolefins, polycarbonates, polysachharides, polyorganosilanes, and polyorganosiloxanes, said membrane support containing a solvent or solvent mixture, an axial base and an oxygen carrier, said solvent or solvent mixture, axial base and oxygen carrier being in the liquid phase when present together, said solvent or solvent mixture being capable of dissolving the axial base and the oxygen carrier when they are present together, said axial base being capable of providing a coordinating atom to the oxygen carrier, and said oxygen carrier being a metal-containing complex having any of the structures



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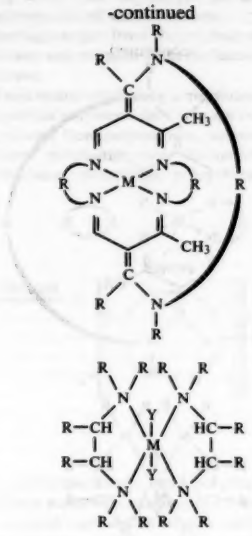
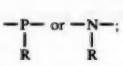


wherein

M is cobalt, iron, copper, nickel, manganese, ruthenium or rhodium;

X is —O—, —S—,



R is hydrogen, alkyl, aryl, halogen, alkoxy or a nitrogen-containing moiety; and

Y is halide, nitrate, thiocyanate or cyanide.

4,542,011

PHARMACEUTICAL COMPOSITIONS OF XANTHINE DERIVATIVES TOLERATED BY THE STOMACH AND PROCESS FOR THEIR PREPARATION

Klaus Gleixner, Taunusstein, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 396,465, Jul. 8, 1982, abandoned. This application May 17, 1984, Ser. No. 611,104

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1981, 3127237

Int. Cl.[4] **A61K** *9/24, 9/28, 9/32, 9/36*

U.S. Cl. 424—16 **16 Claims**

1. A pharmaceutical composition based on granules having an improved compatibility with the stomach and containing inert carrier pellets or granules to which xanthine derivatives have been applied and which have been coated with a gastric juice-resistant coating,

(a) which comprises as xanthine derivative a derivative selected from alkyl-, (ω-1)-oxoalkyl- or (ω-1)-hydroxyalkyldialkylxanthine, the alkyl, oxoalkyl or hydroxyalkyl radical whereof each has from 3 to 7 carbon atoms and is in the 1- or 7-position and which derivative carries in the other 1- or 7-position an alkyl radical having from 1 to 12 carbon atoms and in the 3-position an alkyl radical having from 1 to 4 carbon atoms,

(b) wherein the gastric juice-resistant coating has been applied in the form of an aqueous solution or aqueous dispersion,

(c) wherein only part of the granules have been coated with

a gastric juice-resistant coating, the pharmaceutical composition containing from 20 to 50% of xanthine derivative, from 30 to 75% of inert carrier material and from 5 to 40% of gastric juice-insoluble coating material and the portion of granules soluble or partially soluble in gastric juice amounting up to 30% and

(d) wherein the gastric juice-resistant coating is a polyacrylic resin, a hydroxypropylcellulose phthalate or an aqueous suspension of a copolymer of 90 parts by weight of a vinyl acetate and 10 parts by weight of a crotonic acid.

4,542,012

FILM-FORMING COMPOSITION CONTAINING AN ANTIMICROBIAL AGENT AND METHODS

John D. Dell, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 394,882, Jul. 2, 1982, abandoned. This application Feb. 11, 1983, Ser. No. 465,806

Int. Cl.[4] A61K *9/70, 31/79;* **A61L** *15/00*

U.S. Cl. 424—28 **20 Claims**

1. A dermatologically acceptable, film-forming composition, comprising:

(a) a film-forming polymer which is the reaction product of

(i) a prepolymer having a plurality of isocyanate functionalities, said prepolymer being the reaction product of a polyisocyanate, a major amount of which by weight is diisocyanate, and an isocyanate-reactive compound having a plurality of functionalities selected from the group consisting of a hydroxy group, a primary amine group, a secondary amine group, a thiol group, and a combination of at least two of the foregoing, a major amount of said isocyanate-reactive compound being difunctional with respect to said functionalities contained therein; (ii) a polyvinylpyrrolidone polymer which is the free-radical polymerization reaction product of at least n-vinylpyrrolidone and a vinyl-functional compound; and (iii) a chain-extender for said prepolymer and said polyvinylpyrrolidone polymer, said chain-extender having a plurality of functionalities selected from the group consisting of a hydroxy group, a primary amine group, a secondary amine group, a thiol group, and a combination of at least two of the foregoing, a major amount of said chain-extender being difunctional with respect to said functionalities contained therein; said vinyl-functional compound being further characterized in that it contains a functionality having reactivity with said chain-extender which is substantially equivalent to reactivity of the isocyanate functionalities of said prepolymer with said chain-extender; and

(b) as an antimicrobial agent, iodine which forms a complex with said film-forming polymer;

said composition when applied to skin from a fugitive solvent being capable of forming a substantially water-insoluble, substantially tack-free, flexible film which adheres to skin, releases iodine, when said film is in contact with the skin, and exhibits an elongation of between about 150% and 1000%.

4,542,013

TRINITROGLYCEROL SUSTAINED RELEASE VEHICLES AND PREPARATION THEREFROM

Alec D. Keith, Miami, Fla., assignor to Key Pharmaceuticals, Inc., Miami, Fla.

Continuation-in-part of Ser. No. 281,389, Jul. 8, 1981, abandoned. This application Aug. 16, 1983, Ser. No. 523,988

Int. Cl.[4] A61K *31/21, 31/79, 31/74;* **A61L** *15/03*

U.S. Cl. 424—28 **8 Claims**

1. A polymeric diffusion matrix for the transdermal systemic delivery of polymeric fixed dimension gelled trinitroglycerol through the skin of a patient comprising about 10 to about 40% of

a first lower molecular weight polyvinylalcohol component that is hydrolyzed to a degree of hydrolysis of about 75 to about 92% and has a molecular weight in the range of from about 5,000 to about 40,000; about 2% to about 15% of

a second higher molecular weight polyvinylalcohol component that is hydrolyzed to a degree of hydrolysis of at least 95% and has a molecular weight in the range of from about 90,000 to about 150,000; and about 2 to about 25% of

glycerol, said polymeric diffusion matrix containing sufficient substantially disaccharide-free trinitroglycerol bound to a polymer as a triturate in a non-explosive flowable fixed dimension gel form, said polymer being selected from the group consisting of polyvinyl alcohol, polyvinylpyrrolidone, polyvinyl acetate, polyethylene glycol, polymethacrylate, polymethyl methacrylate, ethyl acrylate-vinyl chloride polymer, and mixtures thereof to be released over a prolonged period of time.

4,542,014

HAIR TREATING COMPOSITION

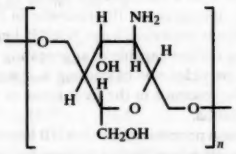
Ann F. Bresak, and Eva Tolgyesi, both of Rockville, Md., assignors to The Gillette Company, Boston, Mass.

Filed Dec. 3, 1982, Ser. No. 446,733

Int. Cl.[4] A61K *7/06, 7/08, 7/11, 47/00*

U.S. Cl. 424—70 **4 Claims**

1. A hair-treating composition selected from the class consisting of hair setting, shampoo, and conditioning compositions comprising an aqueous solution containing from about 1 to about 10% by weight of an adduct of an oligomer of hydrolyzed chitosan and a mixture of amino acids obtained from the hydrolysis of a keratin raw material selected from the class consisting of human hair, animal hair, horn, and feathers and which has a weight average molecular weight of about 80 to 250 has been inserted in claim **9**, line 9, said hydrolyzed chitosan being a mixture of glucosamine oligomers having the following structure:



where n is an integer having the value of 1–10, the percentage by weight of the oligomer mixture in which n is 1, 2, or 3 is at least 70% and in which the percentage by weight of the oligomer in which n is greater than 6 is less than 25%, the proportion of hydrolyzed chitosan to amino acid mixture being from 3:1 to 1:3.

4,542,015

DIALYSIS APPARATUS AND PROCESS FOR CONTROLLING THE PHOSPHATE LEVEL OF BLOOD

Robert Smakman, Nigtevecht, and Gerrit H. van den Berg, Amsterdam, both of Netherlands, assignors to Organon Teknika B.V., Oss, Netherlands

Continuation of Ser. No. 70,630, Aug. 29, 1979, abandoned, which is a division of Ser. No. 895,057, Apr. 10, 1978, Pat. No. 4,213,859. This application Aug. 19, 1982, Ser. No. 409,513

Claims priority, application Netherlands, Apr. 12, 1977, 7703937

Int. Cl.[4] A61K *31/74;* **C08D** *5/20*

U.S. Cl. 424—79 **16 Claims**

1. In a method for the preparation of a cation exchanger charged with metal ions adapted for controlling the phosphate level in blood by oral administration, the steps which comprise charging a cation exchanger with from 10% to 100% alkali

metal ions before or after it is charged with ions of iron (III), tin, lanthanum, aluminum or zirconium.

3. A phosphate sorbent for oral administration capable of controlling the phosphate level in blood comprising an organic cation exchanger charged with ferric ions in a pharmaceutically acceptable carrier.

4,542,016

NON-A NON-B HEPATITIS SURFACE ANTIGEN USEFUL FOR THE PREPARATION OF VACCINES AND METHODS OF USE

Christian Trepo, Bron, France, assignor to Institut Merieux, Lyons, France

Filed Mar. 27, 1981, Ser. No. 248,284
Int. Cl.[4] A61K *39/42, 35/54*
U.S. Cl. 424—86 **9 Claims**

1. A vaccine against viral NANB hepatitis comprising in a physiologically acceptable medium an amount of a purified non infectious fraction containing NANBs antigen in quantities sufficient to cause, on administration, an immunologic response, said NANBs antigen (1) having a density between 1.20 and 1.30 g/ml in a cesium chloride solution and between 1.15 and 1.25 g/ml in a sucrose solution (2) having an electrophoretic migration in the α, β-globulin zone; (3) being associated to particles with a viral appearance, spheres or filaments, the most typical of which have a size ranging from 10 to 45 nm in diameter, the complete virion appearing as a double envelope sphere of 35 to 45 nm;(4) when administered to a being having an immune system, said NANBs antigen causes the formation of antibodies with which it provides a precipitation reaction, the said antibodies also being capable of aggregating and/or precipitating the said viral particles including the complete double envelope virions containing a nucleocapside having a size of about 35–45nm, the said antibodies also being capable, when combined with a fluorescence agent, of causing a cytoplasmic and/or membranous fluorescence in liver tissue sections from subjects suffering from NANB hepatitis; the said antibodies being neither capable of aggregating the complete B hepatitis virus particles nor of causing a cytoplasmic and/or membranous fluorescence in the liver tissue of subjects suffering from B hepatitis.

9. A vaccination process against NANB hepatitis comprising administering to an animal having an immune system a purified NANBs antigen preparation containing said antigen in an amount sufficient to cause an immunologic response.

4,542,017

TREATMENT OF PROTEIN MALNOURISHED BACTERIALLY INFECTED HUMANS WITH LEM

Lyle L. Moldawer, 1 E. Quinobequin Rd., Waban, Mass. 02169; George L. Blackburn, 100 Memorial Dr., Cambridge, Mass. 02142, and Bruce R. Bistrian, 189 Argilla Rd., Ipswich, Mass. 01938

Filed Dec. 9, 1982, Ser. No. 448,183
Int. Cl.[4] A61K *35/14*
U.S. Cl. 424—101 **4 Claims**

1. The method of stimulating metabolic function comprising treating a protein mainourished human who has a serum albumin less than about 3.2 gm/dl and who is bacterially infected by parenterally admistering to said human during said infection a sufficinet amount of LEM to supplement LEM being endogenously produced by said human and to raise the body temperature of the human above normal during at least some of the time the human is infected.

4,542,018

TEICHOMYCIN A_2 PURE SINGLE FACTORS 1, 2, 3, 4 AND 5 AND METHOD FOR THEIR PRODUCTION

Angelo Borghi; Rosa Pallanza; Carolina Coronelli, all of Milan, and Giovanni Cassani, Pavia, all of Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

Filed Jun. 7, 1983, Ser. No. 502,043
Claims priority, application United Kingdom, Jun. 8, 1982, 8216590
Int. Cl.[4] A61K *35/74*
U.S. Cl. 424—119 **4 Claims**

1. An essentially pure individual antibiotic compound selected from the group consisting of Teichomycin A_2 factor 1, Teichomycin A_2 factor 2, Teichomycin A_2 factor 3, Teichomycin A_2 factor 4, Teichomycin A_2 factor 5, identified respectively by the following chemico-physical characteristics:

Teichomycin A_2 factor 1: a white amorphous powder that upon heating begins to darken at about 220° C. and is completely decomposed at 255° C., which

(a) is freely soluble in water at pH >7.0 or at pH <2, in dimethylformamide, dimethylsulfoxide, and propyleneglycol;

slightly soluble in methylcellosolve and glycerol; poorly soluble in methanol and ethanol, almost insoluble in chloroform, benzene, n-hexane, acetonitrile, ethyl ether, acetone, ethyl acetate, carbon tetrachloride

(b) has an ultraviolet absorption spectrum that exhibits the following absorption maxima:

in 0.1N hydrochloric acid:

λ_{max} 278 nm ($E^{1\%}_{1cm}$ =49.5)

in phosphate buffer pH 7.4 :

λ278 nm ($E^{1\%}_{1cm}$ =50.0)

in 0.1N sodium hydroxide :

λ_{max} 297 nm ($E^{1\%}_{1cm}$ =72.1)

(c) an infrared absorption spectrum in nujol with the following absorption maxima: 3700–3100, 2960–2840 (nujol), 1645, 1590, 1510, 1460 (nujol), 1375 (nujol), 1305, 1230, 1180, 1155, 1060, 1025, 970, 890, 845, 815, 720 (nujol);

(d) an elemental analysis, after the sample has been previously dried at about 140° C. under inert atmosphere (%Δw = 8.5), which indicated the following approximate percentage composition (average): carbon 56.70%; hydrogen, 4.90%; nitrogen 6.65%; chlorine 3.80%; oxygen (by difference), 27.95%

(e) a retention time (t_R) of 21.2 minutes when analyzed by reversed phase HPLC using a 5μ Zorbax ® ODS column, and eluting with a linear gradient from 0% to 50% solution B in solution A in 40 minutes (solution A: 25 mM NaH_2PO_4 */acetonitrile* (9/1) buffered at pH 6.0 with 0.1N NaOH;

solution B: 25 mM NaH_2PO_4/acetonitrile (3/7) buffered at pH 6.0 with 0.1N NaOH), with a flow rate of 2 ml/min.; (internal standard: 3,5-dihydroxy-toluene t_R 8.84 minutes)

(f) the following groups of signals in the 270 MHz ^1H NMR spectrum registered in DMSO-d_6 with the addition of a few drops of D_2O (conc. 25 mg/0.5 ml) (TMS as internal standard: δ=0.00 ppm): 0.8–1.5(m); 1.7–2.3 (m); 2.7–4.0 (m); 4.0–4.7 (m) 4.8–5.8 (m); 6.2–8.1 (m)

(g) an acidic function capable of forming salts;

(h) a salifiable basic function

(i) a molecular weight of about 1875 as determined by FAB mass spectrometry;

Teichomycin A_2 factor 2: a white amorphous powder that commences to darken when heated to 210° C. and is completely decomposed at 250° C., which

(a) is freely soluble in water at pH >7.0 or at pH <2 in dimethylformamide, dimethylsulfoxide and propyleneglycol; slightly soluble in methylcellosolve and glycerol;

poorly soluble in methanol and ethanol; almost insoluble in chloroform, benzene, n-hexane, acetonitrile, ethyl ether, acetone, ethyl acetate, carbon tetrachloride

(b) has an ultraviolet absorption spectrum that exhibits the following absorption maxima:
in 0.1N hydrochloric acid:

λ_{max} 278 nm ($E^{1\%}_{1cm}$ =48)

in phosphate buffer pH 7.4:

λ_{max} 278 nm ($E^{1\%}_{1cm}$ =49.0)

in 0.1N sodium hydroxide:

λ_{max} 297 nm ($E^{1\%}_{1cm}$ =70.0)

(c) an infrared absorption spectrum in nujol with the following observable absorption maxima: 3700–3100, 2960–2860 (nujol), 1645, 1590, 1510, 1460 (nujol), 1375 (nujol), 1300, 1260, 1230, 1180, 1150, 1060, 1025, 970, 890, 845, 815, 720 (nujol);

(d) an elemental analysis, after the sample has been previously dried at about 140° C. under inert atmosphere (%Δw =9.8), which indicated the following approximate percentage composition (average): carbon, 56.15%; hydrogen, 5.15%; nitrogen 6.30%; chlorine, 3.90%; oxygen (by difference), 28.50%

(e) a retention time (t_R) of 22.6 minutes when analyzed by reversed phase HPLC using a 5μ Zorbax ® ODS column, and eluting with a linear gradient from 0% to 50% solution B in solution A in 40 minutes (solution A: 25 mM NaH_2PO_4/acetonitrile (9/1) buffered at pH 6.0 with 0.1N NaOH
solution B: 25 mM NaH_2PO_4/acetonitrile (3/7) buffered at pH 6.0 with 0.1N NaOH), with a flow rate of 2 ml/min.; (internal standard: 3,5-dihydroxytoluene t_R 8.84 minutes)

(f) the following groups of signals in 270 MHz ^{1}H NMR spectrum registered in DMSO-d_6 with the addition of a few drops of D_2O (conc. 25 mg/0.5C ml) (TMS as internal standard δ=0.00 ppm): 0.7–1.5 (m); 1.8–2.2 (m); 2.7–4.5(m); 4.6–5.7 (m); 6.2–8.1 (m).

(g) an acidic function capable of forming salts;

(h) a salifiable basic function

(i) a molecular weight of about 1877 as determined by FAB mass spectrometry;

Teichomycin A_2 factor 3: a white amorphous powder that, upon heating begins to decompose at 205° C. and is completely decomposed at 250° C., which

(a) is freely soluble in water at pH >7.0 or at pH <2, in dimethylformamide, dimethylsulfoxide, and propyleneglycol;
slightly soluble in methylcellosolve and glycerol; poorly soluble in methanol and ethanol; almost insoluble in chloroform, benzene, n-hexane, acetonitrile, ethyl ether, acetone, ethyl acetate, carbon tetrachloride

(b) an ultraviolet absorption spectrum that exhibits the following absorption maxima:
in 0.1N hydrochloric acid:

λ_{max} 278 nm ($E^{1\%}_{1cm}$ =49.2)

in phosphate buffer pH 7.4:

λ_{max} 278 nm ($E^{1\%}_{1cm}$ =50.8)

in 0.1N sodium hydroxide:

λ_{max} 297 nm ($E^{1\%}_{1cm}$ =72.7)

(c) an infrared absorption spectrum in nujol with the following observable absorption maxima: 3700–3100, 2960–2850 (nujoln); 1645, 1590, 1510, 1460 (nujol), 1375 (nujol); 1300, 1230, 1180, 1150, 1120, 1060, 1030, 970, 890, 845, 820, 800, 720 (nujol);

(d) an elemental analysis, after the sample has been previously dried at about 140° C. under inert atmosphere (%Δw = 12.0) which indicated the following approximate percentage composition (average): carbon, 56.26%; hydrogen, 5.20%; nitrogen, 6.69%; chlorine, 3.95%; oxygen (by difference), 27.90%,

(e) a retention time (t_R) of 23.3 minutes when analyzed by reversed phase HPLC using a 5μ Zorbax ® ODS column and eluting with a linear gradient from 0% to 50% solution B in solution A in 40 minutes (solution A: 25 mM NaH_2PO_4/acetonitrile (9/1) buffered at pH 6.0 with 0.1N NaOH
solution B: 25 mM NaH_2PO_4/acetonitrile (3/7) buffered at pH 6.0 with 0.1N NaOH), with a flow rate of 2 ml/min; (internal standard:3,5-dihydroxytoluene t_R 8.84 minutes)

(f) the following groups of signals in 270 MHz ^{1}H NMR spectrum registered in DMSO-d_6 with the addition of a few drops of D_2O (conc. 25 mg/0.5 ml) (TMS as internal standard δ=0.00 ppm): 0.7–1.5 (m); 1.8–2.0 (m); 2.7–4.5 (m); 4.6–5.7 (m); 6.2–8.0 (m);

(g) an acidic function capable of forming salts.

(h) a salifiable basic function

(i) a molecular weight of about 1877 as determined by FAB mass spectrometry;

Teichomycin A_2 factor 4: a white amorphous powder that upon heating, begins to darken at about 210° C. and is completely decomposed at 250° C., which

(a) is freely soluble in water at pH >7.0 or at pH <2, in dimethylformamide, dimethylsulfoxide, and propyleneglycol;
slightly soluble in methylcellosolve and glycerol; poorly soluble in methanol and ethanol, almost insoluble in chloroform, benzene, n-hexane, acetonitrile, ethyl ether, acetone, ethyl acetate, carbon tetrachloride

(b) has an ultraviolet absorption spectrum that exhibits the following absorption maxima:
in 0.1N hydrochloric acid :

λ_{max} 278 nm ($E^{1\%}_{1cm}$ =52.5)

in phosphate buffer pH 7.4 :

λ_{max} 278 nm ($E^{1\%}_{1cm}$ =52.5)

in 0.1N sodium hydroxide :

λ_{max} 297 nm ($E^{1\%}_{1cm}$ =75.5)

(c) an infrared absorption spectrum in nujol with the following absorption maxima: 3700–3100, 2960–2840 (nujol), 1645, 1590, 1510, 1460 (nujol), 1375 (nujol), 1300, 1230, 1175, 1140, 1060, 1025, 970, 890, 840, 815, 720 (nujol);

(d) an elemental analysis, after the sample has been previously dried at about 140° C. under inert atmosphere (%Δw = 9.8), which indicated the following approximate percentage composition (average): carbon 56.50%; hydrogen, 5.10%; nitrogen 6.50%; chlorine 3.80%; oxygen (by difference), 28.10%

(e) a retention time (t_R) of 25.8 minutes when analyzed by reversed phase HPLC using a 5μ ® Zorbax ODS column, and eluting with a linear gradient from 0% to 50% solution B in solution A in 40 minutes
(solution A: 25 mM NaH_2PO_4/acetonitrile (9/1) buffered at pH 6.0 with 0.1N NaOH;
solution B: 25 mM NaH_2PO_4/acetonitrile (3/7) buffered at pH 6.0 with 0.1N NaOH), with a flow rate of 2 ml/min.; (internal standard: 3,5-dihydroxy-toluene t_R 8.84 minutes)

(f) an acidic function capable of forming salts

(g) a salifiable basic function

(h) a molecular weight of about 1891 as determined by FAB mass spectrometry

Teichomycin A_2 factor 5: a white amorphous powder that commences to darken when heated to 210° C. and is completely decomposed at 250° C., which

(a) is freely soluble in water at pH >7.0 or at pH <2 in dimethylformamide, dimethylsulfoxide and propyleneglycol;
slightly soluble in methylcellosolve and glycerol; poorly soluble in methanol and ethanol; almost insoluble in chloroform, benzene, n-hexane, acetonitrile, ethyl ether, acetone, ethyl acetate, carbon tetrachloride
(b) has an ultraviolet absorption spectrum that exhibits the following absorption maxima:
in 0.1N hydrochloric acid:

λ_{max} 278 nm ($E^{1\%}_{1cm}$ =49.6)

in phosphate buffer pH 7.4:

λ_{max} 278 nm ($E^{1\%}_{1cm}$ =51.8)

in 0.1N sodium hydroxide:

λ_{max} 297 nm ($E^{1\%}_{1cm}$ =78.8)

(c) an infrared absorption spectrum in nujol with the following observable absorption maxima: 3700–3100, 2960–2840 (nujol), 1645, 1590, 1510, 1460 (nujol), 1375 (nujol), 1300, 1230, 1175, 1145, 1060, 1025, 970, 890, 840, 815, 720 (nujol),
(d) an elemental analysis, after the sample has been previously dried at about 140° C. under inert atmosphere (%Δw =10.1), which indicated the following approximate percentage composition (average): carbon, 56,60%; hydrogen, 5.05%; nitrogen 6.63%; chlorine, 3.85%; oxygen (by difference), 27.87%
(e) a retention time (t_R) of 26.4 minutes when analyzed by reversed phase HPLC using a 5μ Zorbax ® ODS column, and eluting with a linear gradient from 0% to 50% solution B in solution A in 40 minutes
(solution A: 25 mM NaH_2PO_4/acetonitrile (9/1) buffered at pH 6.0 with 0.1N NaOH
solution B: 25 mM NaH_2PO_4/acetonitrile (3/7) buffered at pH 6.0 with 0.1N NaOHn), with a flow rate of 2 ml/min.; (internal standard: 3,5-dihydroxytoluene t_R 8.84 minutes)
(f) an acidic function capable of forming salts.
(g) a salifiable basic function
(h) a molecular weight of about 1891 as determined by FAB mass spectrometry.

and their pharmaceutically acceptable salts.

4,542,019

ANTACID COMPOSITIONS

John Lezdey, 976 Kingston Dr., Cherry Hill, N.J. 08034

Filed Mar. 11, 1983, Ser. No. 474,288
Int. Cl.⁴ A61K *33/06, 33/08, 33/10*
U.S. Cl. 424—157 **9 Claims**

1. A method for treating patients suffering from duodenal disturbances caused by gastric juices which comprises administering to said patient an effective amount of an antacid and liposome, wherein the antacid is retained on or in the liposome and the lipids of said lipsome are formed of non-toxic physiologically acceptable and metabolizable phospholipids.

4,542,020

LONG-LASTING ADHESIVE ANTIFUNGAL SUPPOSITORIES

Ivan Jackson, Wirral; Michael D. Ward, Merseyside, and Frank Ridgway, Birkenhead, all of England, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Aug. 17, 1984, Ser. No. 641,798
Int. Cl.⁴ A61K *9/02, 31/71*
U.S. Cl. 514—31 **8 Claims**

1. In a suppository formulation which is substantially free of water and comprised of an antifungal agent selected from the group consisting of nystatin, amphotericin B, miconazole, ketoconazole, econazole or griseofulvin in an amount of from about 0.1 to about 6% by weight of the total formulation, and a suppository base, the improvement which comprises employed as said suppository base a substantially water-free base formulation which melts at body temperature, which suppository base formulation consists essentially of a combination of a cellulose polymer hydrocolloid or alkali metal salt thereof in an amount of from about 0.5 to about 10% by weight of the formulation, and a low-melting suppository base having a melting point of less than 95° F., said cellulose polymer being selected from the group consisting of a cellulose either, a cellulose alkyl hydroxylate, a cellulose alkyl carboxylate or an alkali metal salt of a cellulose alkyl carboxylate or mixtures thereof, whereupon shortly after vaginal insertion of said suppository, said suppository base melts and releases said hydrocolloid and antifungal agent, and said hydrocolloid adheres to the vaginal membranes and retains said antifungal agent at the sites of infection.

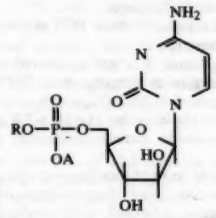
4,542,021

ANTITUMOR COMPOSITIONS FOR NON-INJECTION ADMINISTRATION

Kenjiro Kodama; Akira Kuninaka, both of Choshi, and Mineo Saneyoshi, 2-102 Chuo Daini Koumuin Shukusha, Kita 7 Jo Nishi 9-Chome, Kita-Ku, Sapporo-Shi, Hokkaido, all of Japan, assignors to Yamasa Shoyu Kabushiki Kaisha, Chiba and Mineo Saneyoshi, Hokkaido, both of, Japan

Continuation of Ser. No. 49,635, Jun. 18, 1979, abandoned. This application Nov. 10, 1980, Ser. No. 205,592
Claims priority, application Japan, Jun. 20, 1978, 53-73698
Int. Cl.⁴ H61K *31/71, 31/70*
U.S. Cl. 514—49 **5 Claims**

1. A method of inhibiting the growth of a malignant tumor treatable by ara-C in an animal which comprises administering orall to said animal a pharmacologically effective quantity sufficient to inhibit malignant tumors treatable by ara-C of an ester of 1-β-D-arabinofuranosylcytosine-5'-phosphate represented by the formula



wherein R is a monovalent aliphatic hydrocarbon group having 14 to 23 carbon atoms selected from the group consisting of tetradecyl, pentadecyl, cetyl, heptadecyl, stearyl, nonadecyl, eicosyl, heneicosyl, tricosyl, oleyl, linoleyl and palmitoleyl, and A represents a hydrogen atom or a pharmaceutically-acceptable alkali cation.

4,542,022

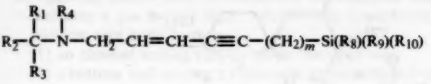
SILYL-ALKYN-EN-YLAMINE DERIVATIVES

Anton Stütz, Maria Enzersdorf, Austria, assignor to Sandoz Ltd., Basel, Switzerland

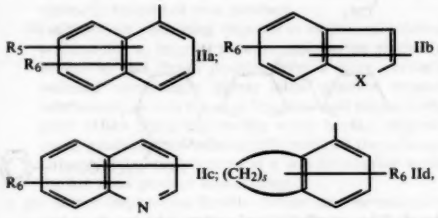
Filed Jan. 20, 1982, Ser. No. 340,981
Claims priority, application Switzerland, Jan. 26, 1981, 476/81
Int. Cl.⁴ C07F *7/08, 7/10*
U.S. Cl. 514—63 **5 Claims**

1. A compound of the formula I:

I



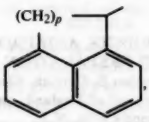
wherein R_1 represents a group of formula IIa, IIb, IIc or IId:



R_2 represents hydrogen or lower alkyl or,

R_1 and R_2 together with the carbon atom to which they are attached represent a group of formula IIe,

IIe



R_3 and R_4 represent independently hydrogen or lower alkyl or, when R_1 represents a group of formula IIa, IIb, IIc or IId, can also represent together a straight-chain C_3–C_5 alkylene bridge,

R_8, R_9 and R_{10} represent independently lower alkyl or lower alkenyl, and

m is 0, 1 or 2,

R_5 and R_6 represent independently hydrogen, halogen, lower alkyl, lower alkoxy or trifluoromethyl,

X represents oxygen, sulphur, —O—CH_2—, —S—CH_2—, —CH_2— or —N(R_7)—, wherein R_7 represents hydrogen or lower alkyl,

p is 1, 2 or 3 and

s is 3, 4 or 5,

or an acid addition salt thereof.

4,542,023

FUNGICIDAL SALTS OF ORGANOPHOSPHORUS DERIVATIVES

Guy Lacroix, Lyons; Claude Anding, Chaponost, and Andrée Viricel, Villeurbanne, all of France, assignors to Rhone-Poulenc Agrochimie, Lyons, France

Filed Jan. 31, 1984, Ser. No. 575,574

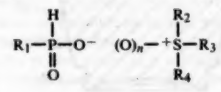
Claims priority, application France, Feb. 1, 1983, 83 01727; Oct. 13, 1983, 83 16499

Int. Cl.[4] **C07F** *9/143, 9/48;* **A01N** *57/00;* **A61K** *31/00*

U.S. Cl. 514—126 **13 Claims**

1. An organophosphorus derivative, of the formula (I)

(I)



wherein:

R_1 represents hydrogen, hydroxyl, lower alkyl group of from 1 to 4 carbon atoms optionally substituted by halogen, hydroxyl or hydroxylamino; an optionally substituted phenyl group; or the group OR_5 wherein R_5 represents a lower alkyl group of from 1 to 4 carbon atoms;

R_2 and R_3, which are identical or different, represent an alkyl group of from 1 to 5 carbon atoms or an optionally substituted phenyl group; or R_2 and R_3 together form a —(CH_2)—$_m$ group, m being an integer equal to 4 or 5;

R_4 represents a straight or branched chain alkyl group of from 1 to 18 carbon atoms optionally substituted by halogen, hydroxyl or hydroxylamino; an alkenyl group of from 2 to 18 carbon atoms; or an optionally substituted benzyl or phenyl radical; and

n is an integer equal to zero or 1.

4. A derivative according to claim **1**, wherein R_1 is ethyl.

10. A method for protecting plants against diseases, comprising applying thereto or to the situs thereof a derivative according to any of claims **1** to **4**.

4,542,024

15,16 -METHYLENE-17α-PREGNA-4,6-DIENE-21-CARBOXYLIC ACID SALTS, PHARMACEUTICAL PREPARATIONS CONTAINING THEM AND A PROCESS FOR THEIR PRODUCTION

Klaus Nickisch; Dieter Bittler; Henry Laurent; Rudolf Wiechert, and Wolfgang Losert, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin, Fed. Rep. of Germany

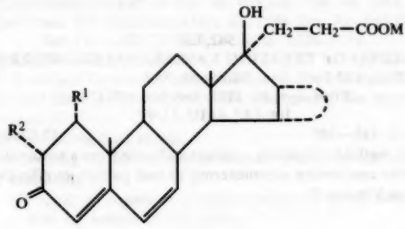
Filed Jul. 13, 1984, Ser. No. 630,552

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1983, 3326013

Int. Cl.[4] **C07J** *9/00;* **A61K** *31/56*

U.S. Cl. 514—178 **15 Claims**

1. A 15,16-methylene-17α-pregna-4,6-diene-21-carboxylic acid salt of the formula



wherein

R^1 and R^2 each is hydrogen or together they form an additional CC bond or a methylene group,

M is an alkali metal,

and the methylene group in the 15,16 position is in the α or β position.

15. A method of achieving an antialdosterone effect in a patient comprising administering an amount of a compound of claim **1** to the patient.

4,542,025

INJECTABLE, LONG-ACTING MICROPARTICLE FORMULATION FOR THE DELIVERY OF ANTI-INFLAMMATORY AGENTS

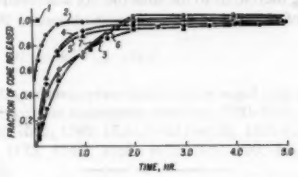
Thomas R. Tice, Birmingham; Danny H. Lewis, Gardendale; Donald R. Cowsar, and Lee R. Beck, both of Birmingham, all of Ala., assignors to The Stolle Research and Development Corporation, Cincinnati, Ohio and Southern Research Institute, Birmingham, Ala.

Continuation of Ser. No. 402,857, Jul. 29, 1982,. This application Apr. 30, 1984, Ser. No. 605,210

The portion of the term of this patent subsequent to Jul. 23, 2002, has been disclaimed.

Int. Cl.[4] A61K *31/58*

U.S. Cl. 424—78 **12 Claims**



1. An anti-inflammatory agent containing a microparticle composition prepared by a process, comprising:

(a) dissolving or dispersing an apti-inflammatory agent excluding corticosteroid anti-inflammatory agents and selected from the group consisting of enzymes, hormones, phenylbutazones, salicylates, steroids and sulfonamides in a solvent and dissolving a biocompatible and biodegradable wall forming material in said solvent;

(b) dispersing said solvent containing said anti-inflammatory agent and wall forming material in a continuous phase processing medium;

(c) evaporating a portion of said solvent from said dispersion of step (b), thereby forming microparticles containing said anti-inflammatory agent in the suspension; and

(d) extracting the remainder of the solvent from said microparticles.

6. A method of treating inflammation, comprising:

administering microparticles of claim 1 containing a pharmaceutically effective amount of an anti-inflammatory compound in a biocompatible and biodegradable matrix material to a subject.

4,542,026

METHOD OF TREATING VASOMOTOR DISORDERS

Jose Ríos, 930 Park Ave., Elizabeth, N.J.

Filed Apr. 29, 1983, Ser. No. 490,174

Int. Cl.[4] A61U *31/44*

U.S. Cl. 514—345 **17 Claims**

1. A method of treating a patient suffering from a vasomotor disorder comprising administering to said patient an effective dose of Vitamin B_6.

4,542,027

LAIDLOMYCIN PHENYLCARBAMATE

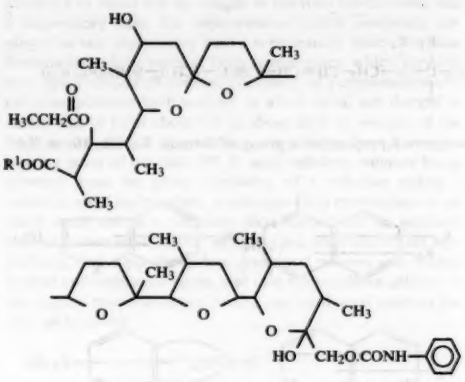
Robin D. Clark, Palo Alto, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Feb. 23, 1984, Ser. No. 582,691

Int. Cl.[4] A61K *31/35*; C07D *309/10*

U.S. Cl. 514—459 **7 Claims**

1. A compound of the formula



wherein R^1 is an alkali metal cation or hydrogen.

4. A method of increasing the efficiency of food utilization in a ruminant animal having a developed rumen function which comprises the oral administration to such animal of a propionate-increasing amount of a compound of claim 1.

4,542,028

CONFECTION PRODUCTS, AND PROCESSES FOR THEIR PREPARATION

Ian Butcher, Harrow; Gordon S. Carrick, Stroud, and Kevin P. Hillman, Bishops Cleeve, all of England, assignors to Thomas J. Lipton Inc., Englewood Cliffs, N.J.

Filed Aug. 25, 1982, Ser. No. 411,185

Claims priority, application United Kingdom, Aug. 26, 1981, 8125970; Apr. 16, 1982, 8211182

Int. Cl.[4] A23G *9/24, 9/04*

U.S. Cl. 426—100 **11 Claims**

1. An extruded composite frozen confection product which comprises about 4 to 20 superimposed thin extruded layers of an aerated frozen first confection material, each of said layers having a thickness of less than about 5 millimeters and being interleaved by thin layers of a second confection material having a thickness less than about 1 millimeter, said second confection material comprising a suspension in a fat composition of flavoring and sweetening solids selected from the group consisting of chocolate, peanut butter, fruit and honey.

4,542,029

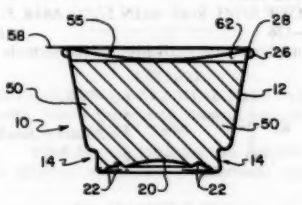
HOT FILLED CONTAINER

Ali R. Caner, Woodstock, and Kenneth B. Spencer, Barrington, both of Ill., assignors to American Can Company, Greenwich, Conn.

Continuation of Ser. No. 275,395, Jun. 19, 1981. This application Feb. 27, 1984, Ser. No. 582,159

Int. Cl.[4] B65D *21/02, 41/14*

U.S. Cl. 426—127 **9 Claims**



1. A hot-filled hermetically sealed gas barrier multi-layer

plastic container with a side wall free of deformation comprising,

an open-top plastic body of multilayer construction which includes a gas barrier layer substantially impervious to oxygen, said body having:

(1) an annular sealing surface about the open top,

(2) a bottom wall having a transverse cross-sectional configuration defining means which permits diaphragmatic flexing thereof inwardly of said body,

(3) a side wall free of paneling or deformation notwithstanding said internal vacuum upon cooling of the hermetically sealed hot food product,

(4) said bottom wall being disposed in an inwardly flexed position due to internal vacuum, and having gradually moved to said flexed position from a more outward unflexed substantially planar initial position located substantially within the axial length of said plastic body prior to hot filling and sealing while having cooperatively gradually and substantially reduced the substantial or high internal vacuum as it was developing while the hot food product was cooling,

a gas barrier impervious flexible closure disc hermetically sealed to the sealing surface by adhesive means defining with said closure disc and body the hermetic seal, which withstands the high internal vacuum which gradually develops upon cooling of and consequent condensation of the moisture vapor of the product, withstands the subsequent substantially reduced internal vacuum, and yet allows easy peel removal of the disc from the sealing surface,

said closure disc also being disposed in an inwardly flexed position due to internal vacuum, as allowed by the headspace, and having gradually moved to said flexed position from a more outward unflexed initial position of a substantially flat plane across said sealing surface while also having cooperatively gradually and substantially reduced the high internal vacuum as it was developing,

a sterilized hot-fillable food product in the container, said food product having a measureable vapor pressure when hot-filled into the container at a temperature of up to about 190° F. after the container is hermetically sealed, and,

a headspace in said container between said food product and the said closure disc when hermetically sealed,

said adhesive means, and said cooperative inwardly flexed positions of said closure disc and integral bottom wall together having cooperatively substantially reduced or dissipated the high internal vacuum, and together cooperatively maintaining the substantially reduced internal vacuum in the container, said side wall unpaneled, said hermetic seal unruptured, and said closure disc easily peelable.

4,542,030

PROCESS FOR PREPARING LOW CALORIE FRENCH FRY PRODUCT

John F. Haury, Payette, Id., and Charles T. Hensley, Ontario, Oreg., assignors to Ore-Ida Foods, Inc., Boise, Id.

Continuation of Ser. No. 555,085, Nov. 25, 1983, abandoned. This application Mar. 6, 1985, Ser. No. 708,889

Int. Cl.⁴ A23L *1/216*

U.S. Cl. 426—262 **15 Claims**

1. A process for preparing a frozen french fry product having a lower calorie and oil content in comparison with a conventional french fry, comprising the steps of:

slicing potatoes to produce elongated potato strips;

blanching the potato strips;

immersing the potato strips in a solution containing 0.2 to 0.4% by weight sodium acid pyrophosphate and 0.5 to 3.5% by weight caramel;

frying the potato strips in oil for a total maximum time of 40 seconds; and then

freezing the fried potato strips.

4,542,031

PROCESS FOR THE PRODUCTION OF ANIMAL FEEDSTUFF

Taiji Nakajima; Tsuneo Togawa, and Masao Koike, all of Yokohama, Japan, assignors to Nippon Formula Feed Manufacturing Co. Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 382,802, May 27, 1982, abandoned. This application Dec. 17, 1984, Ser. No. 682,590

Claims priority, application Japan, May 30, 1981, 56-81872

Int. Cl.⁴ A23K *1/00*

U.S. Cl. 426—307 **1 Claim**

1. A method for the preparation of an animal feedstuff in soft granular form consisting essentially of admixing a powdered nutritionally balanced pig or calf feed with 1–10% propylene glycol in a mixture with stirring and at a temperature of 70° C. or less to agglomerate the mixture; allowing the mixture to stand unstirred in the mixer for a period of time sufficient to cake and solidify the mixture; reoperating the mixer to particulate the solidified mixture and removing the particles therefrom; pulverizing said particles to form powdered granules; spraying the powdered granules with 2–30% fat or oil to provide dimensional stability and cooling the sprayed granules, thereby providing a dimensionally stabilized soft granular feedstuff having from 2 to 25% by weight of moisture and a moisture activity of less thatn 0.90.

4,542,032

FEED SUPPLEMENTS AND METHODS FOR THE PREPARATION THEREOF

Alex E. Miller, Placentia, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Mar. 21, 1983, Ser. No. 477,531

Int. Cl.⁴ A23K *1/08*

U.S. Cl. 426—319 **11 Claims**

1. A method for inhibiting the crystallization or precipitation of lactose from whey which comprises contacting the whey with a bisulfite moiety to form a water-soluble addition product of lactose and said bisulfite moiety.

4,542,033

SUGAR AND ACID INFUSED FRUIT PRODUCTS AND PROCESS THEREFOR

Om P. Agarwala, 536 - 17th Ave. NW., New Brighton, Minn. 55112

Continuation-in-part of Ser. No. 469,189, Feb. 24, 1983, abandoned. This application Oct. 23, 1984, Ser. No. 663,744

Int. Cl.⁴ A23B *7/10, 7/03, 7/02;* **A23L** *3/34*

U.S. Cl. 426—321 **21 Claims**

1. A method for preparing shelf stable fruit pieces exhibiting improved flavor, color and texture, comprising the steps in sequence of:

(A) providing fruit pieces;

(B) cooking the fruit pieces in a syrup, said syrup consisting essentially of

(1) sugar or sugars at a concentration of about 30% to 90% by weight of the syrup,

(2) sufficient acidulants to provide the syrup with a pH of about 3.75 to 1.5, and the syrup having

(3) a temperature of about 120° F. to 200° F. for about 10 to 60 minutes to form cooked, fruit pieces wherein sugar and acid are infused into the individual cells of the fruit pieces;

(C) removing the fruit pieces from the syrup; and

(D) cooling the infused fruit pieces to below their gelling point to form a gel within and between the cells of the fruit.

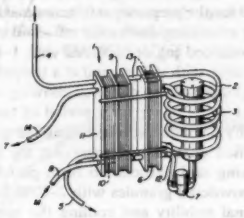
4,542,034
METHOD FOR HEAT TREATMENT OF MILK AND THE LIKE

Olaf Aule, Bandhagen, and Tommy Norén, Tumba, both of Sweden, assignors to Alfa-Laval AB, Tumba, Sweden

Continuation of Ser. No. 406,824, Aug. 10, 1982, abandoned, which is a continuation-in-part of Ser. No. 204,130, Nov. 5, 1980, abandoned. This application Feb. 12, 1985, Ser. No. 700,340

Int. Cl.⁴ A23C *1/00*

U.S. Cl. 426—522 **5 Claims**



1. A method for heat treating milk, said method employing a treatment apparatus including:

a first plate heat exchanger;

a second plate heat exchanger;

tubing having a predetermined length connecting the first plate heat exchanger with the second plate heat exchanger; and

a third plate heat exchanger;

said method comprising:

directing a raw milk stream to the first plate heat exchanger within less than one hour from collection from milk-producing animals, whereby the raw milk stream is heated by exchange with a heated milk stream, to produce a heated raw milk stream;

directing the heated raw milk stream from the first plate heat exchanger to the second plate heat exchanger, whereby the raw milk is further heated by exchange with a heating medium to produce the heated milk stream in the second exchanger;

flowing the heated milk stream through the tubing from the second plate heat exchanger to the first plate heat exchanger, whereby the heated milk is retained at an elevated temperature for a period of time determined by the length of the tubing and the flowrate of the milk and whereby the heated milk stream provides a heat source for heating the raw milk in the first plate heat exchanger;

directing the heated milk stream from the first plate heat exchanger to the third plate heat exchanger, whereby the heat milk stream is cooled by exchange with a cooling medium in the third exchanger.

4,542,035
STABLE AERATED FROZEN DESSERT WITH MULTIVALENT CATION ELECTROLYTE

Victor T. Huang, Brooklyn Center; Cynthia A. Colson, Minneapolis; Sam Yong, Minneapolis, and John F. Clemmings, Minneapolis, all of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed Mar. 16, 1984, Ser. No. 590,255

Int. Cl.⁴ A23G *9/00*

U.S. Cl. 426—565 **22 Claims**

1. A process of making an oil in water emulsion containing food product comprising the steps of:

(a) mixing oil, water, protein and an edible multivalent cationic electrolyte to form an oil in water emulsion mix, said electrolyte at least partially dissociating in the mix whereby the mix contains multivalent cations from the electrolyte in an amount in the range of between about 0.5% and about 50% by weight of said protein;

(b) aging said mix during which the viscosity of the mix is increased by the cations at least 10% as compared to the same mix without the cations.

4,542,036
PROCESS FOR SEPARATING SOLIDS FROM OILS

Pieter J. Maes, Tuinstraat 41, B-8730 Harelbeke, and Albert J. Dijkstra, Albijn Vanden Abeelelaan, 2, B-8500 Kortrijk, both of Belgium

Continuation of Ser. No. 473,620, Mar. 9, 1983, abandoned. This application Jul. 9, 1984, Ser. No. 628,785

Claims priority, application United Kingdom, Mar. 16, 1982, 8207612

Int. Cl.⁴ A23D *5/00*; **C09F** *5/02*

U.S. Cl. 426—601 **6 Claims**

1. A centrifugal separation process for at least partially separating liquid and solid components of an edible oil mixture containing a liquid phase and crystalline solids, said process comprising subjecting said edible oil mixture to a centrifugal force of at least 2000 G for an average period of time from 3 to 50 seconds in a solid bowl decanter including a cylindrical section, a conical section and a scroll capable of rotating at a differential speed relative to said bowl so as to separate said liquid phase from said crystalline solids whereby a solids cake is formed and whereby the liquid phase removed from said crystalline solids is replaced by the atmosphere, and continuously advancing, mechanically or centrifugally or by a combination of both, the resulting solids cake over a surface which is at an acute angle relative to the direction of the centrifugal force.

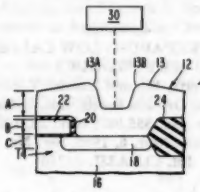
4,542,037
LASER INDUCED FLOW OF GLASS BONDED MATERIALS

Michelangelo Delfino, Mountain View, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Continuation of Ser. No. 143,983, Apr. 28, 1980, abandoned. This application Jun. 30, 1981, Ser. No. 300,706

Int. Cl.³ B05D *3/06*

U.S. Cl. 427—53.1 **47 Claims**



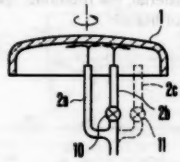
1. A method of inducing flow or densification of a first silicon-oxygen bonded glass portion of an integrated circuit structure in close proximity to a second portion of the structure containing different material the first portion being of the type wherein flow or densification is induced therein upon application of heat thereto, comprising heating the first portion, by a laser beam having an emission coupled to the absorption band of said silicon-oxygen bonded glass, to an extent substantially greater than the second portion.

4,542,038

METHOD OF MANUFACTURING CATHODE-RAY TUBE

Yoshiyuki Odaka, Isumi; Kouichi Nakazato, and Yoshifumi Tomita, both of Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 27, 1984, Ser. No. 655,348
Claims priority, application Japan, Sep. 30, 1983, 58-180283
Int. Cl.[4] B05D *5/06, 3/12*
U.S. Cl. 427—68 6 Claims



1. A method of manufacturing a cathode-ray tube, wherein in forming a phosphor screen on an inner surface of a faceplate of the cathode-ray tube, the inner surface of the faceplate faces downward while the faceplate is rotated about an axis of the cathode-ray tube, and a liquid material for forming a film is sprayed from a supply nozzle arranged to be substantially perpendicular to the inner surface of the faceplate so as to spray the liquid material on the inner surface of the faceplate along all directions, thereby forming a uniform film throughout the inner surface of the faceplate.

4,542,039

PRODUCTION OF COLORED LEGENDS

Martin E. Dowzall, Wyckoff, N.J., assignor to Esselte Pendaflex Corporation, Garden City, N.Y.

Filed Jun. 27, 1984, Ser. No. 625,042
Claims priority, application United Kingdom, Jul. 5, 1983, 8318162
Int. Cl.[4] B41M *5/00*
U.S. Cl. 427—149 5 Claims

1. The method of making a colored legend on a desired receptor surface in colored lettering which comprises

forming the desired legend by a selectively applying dry transfer indicia from a dry transfer sheet bearing such indicia to a porous intermediate receptor surface,

applying a coloring material to the surface of the legend on said intermediate receptor,

applying an adhesive web to the legend,

applying liquid to the rear face of the intermediate receptor surface to reduce the strength of the bond between the indicia forming the legend and the surface of the intermediate receptor to less than the strength of the bond between the indicia and the adhesive web,

peeling the adhesive web bearing the indicia away from the intermediate receptor surface and positioning said web over the desired final receptor surface;

applying pressure to the back surface of the adhesive web to cause to the indicia forming the legend to adhere to the final receptor surface, and

withdrawing the adhesive web to leave the indicia forming the legend adhered to said final receptor surface.

4,542,040

METHOD AND MEANS FOR SPRAYING AGGREGATES FOR FIREPROOF INSULATION ONTO A SUBSTRATUM

David M. Nowak, 1427 Hampshire Dr., South Bend, Ind. 46614

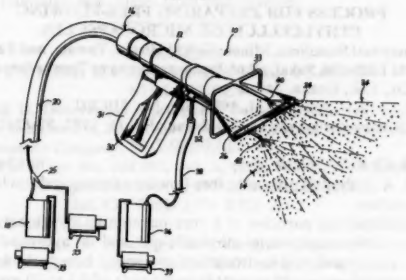
Continuation of Ser. No. 449,468, Dec. 13, 1982, abandoned.
This application Apr. 26, 1984, Ser. No. 604,369
Int. Cl.[4] B05D *1/12*
U.S. Cl. 427—196 1 Claim

1. The method of applying a lightweight particulate insulation material to a target surface to a thickness of up to three inches in successive applications consisting of the steps of:

providing in one container a quantity of lightweight expanded particles consisting of a material selected from the group consisting of perlite and vermiculite, and providing in a second container a quantity of an adhesive material;

providing first conduit means for discharging said particles from said one container, said first conduit means including a narrow, outwardly flared outlet for discharging said particles into a substantially horizontal planar fan pattern;

providing second conduit means for discharging a spray of said adhesive from said second container;



and simultaneously discharging said particles at a pressure in the range of ¼ to 6 pounds per square inch and discharging a spray of said adhesive in directed intersecting paths toward said target surfaces whereby the adhesive spray contacts said particles in air prior to reaching said target surface, and continuing said discharge across said target surface in successive passes until fire proof insulation coating of selected thickness is achieved;

said adhesive consisting essentially of a silicate derivative compound;

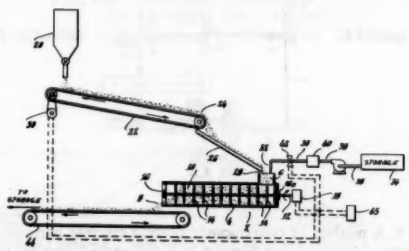
and a step of autoclaving said silicate derivative adhesive with an acid prior to discharging said adhesive towards said target surface.

4,542,041

APPARATUS FOR COATING PARTICULATE MATERIAL

Thomas R. McClellan, Seabrook, and Pat L. Murray, Baytown, both of Tex., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 466,940, Feb. 16, 1983, Pat. No. 4,516,524.
This application Mar. 27, 1984, Ser. No. 593,786
Int. Cl.[4] B05D *7/00*
U.S. Cl. 427—212 8 Claims



1. A method for continuously coating wood furnish with fluid binder adhesive which comprises the steps of

continuously feeding said wood furnish and fluid binder

adhesive separately in predetermined proportions to a blending zone;

continuously blending said wood furnish and fluid binder adhesive in said blending zone by means of an agitator with paddles wherein a major proportion of said binder adhesive contacts said wood furnish;

continuously conveying the blended materials to a storage zone; and

providing master control means for simultaneously discontinuing said feeding of said wood furnish and said fluid binder adhesive and said blending of said materials.

4,542,042

PROCESS FOR PREPARING FREE-FLOWING ETHYLCELLULOSE MICROCAPSULES

Masayoshi Samejima, Minoh; Goichi Hirata, Yawata, and Takashi Ishibashi, Sakai, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Filed Jul. 1, 1983, Ser. No. 510,202

Claims priority, application Japan, Jul. 16, 1982, 57-124829

Int. Cl.[4] B05D *7/00*

U.S. Cl. 427—213.36 **19 Claims**

1. A method of preparing free-flowing microcapsules which comprises

(i) dispersing particles of a core material in a cyclohexane solution containing ethylcellulose and a hydrocarbon compound, said hydrocarbon compound being soluble in cyclohexane and present in an amount of 0.1 to 20 grams per 100 ml of cyclohexane, said hydrocarbon compound further having a molecular weight of 150 to 3,000 and a solubility parameter (δ, at 25° C.) of 7 to 10 $(cal/cm^3)^{\frac{1}{2}}$, to form a dispersion,

(ii) cooling said dispersion until ethylcellulose separates out from said dispersion to form coating walls on said particles of said core material to form microcapsules.

4,542,043

METHOD AND APPARATUS FOR CONTINUOUSLY COATING DISCRETE PARTICLES IN TURNING FLUIDIZED BED

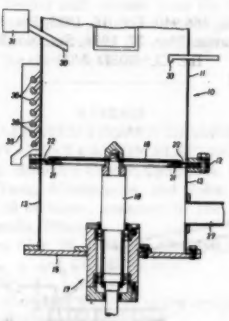
Eiichi Abe, and Hideharu Hirosue, both of Tosu, Japan, assignors to Agency of Industrial Science and Technology, Tokyo, Japan

Filed Oct. 26, 1984, Ser. No. 664,961

Claims priority, application Japan, Oct. 29, 1983, 58-203542

Int. Cl.[4] B05D *1/22*; **B05C** *19/02*

U.S. Cl. 427—213 **3 Claims**



1. A method of continuously coating discrete particles in a turning fluidised bed formed in a cylindrical coating vessel with a rotary disk at the bottom thereof by blowing hot air into the vessel through air blow holes located between the circumference of said disk and cylindrical side wall of said vessel while spraying a coating material into said vessel for contact with the discrete particles in the turning fluidised bed, characterized in that said method comprises:

introducing a particulate raw material and a coating material into said turning fluidised bed at constant feed rates and

discharging coated particles at the same rate as said feed rate of said particulate raw material through at least a particle discharge port located at such a height as to guarantee an average residence time corresponding to a desired coating rate under given operating conditions including the feed rate of said raw material, the rotational speed of said disk and the feed rate of hot air.

4,542,044

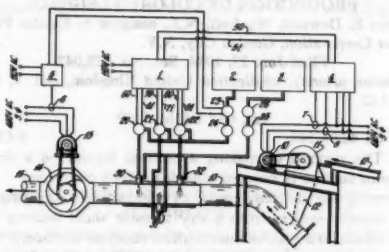
METHOD AND APPARATUS TO AUTOMATICALLY APPLY A LIQUID DUST INHIBITOR TO FIBERGLASS BLOWING WOOL

Barclay P. Gano, Granville, and James L. Rucker, Worthington, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Nov. 17, 1983, Ser. No. 552,937

Int. Cl.[4] B05D *7/00*; **B05B** *17/00*

U.S. Cl. 427—215 **16 Claims**



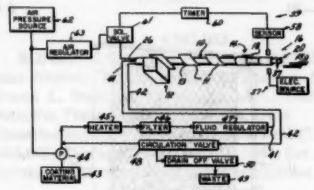
1. An apparatus for applying a dust inhibitor to milled glass fibers comprised of: a means for determining the weight of glass fibers milled; a means for transporting said glass fibers along a supply tube; a plurality of spray nozzles positioned along said supply tube; a source of air to constantly supply air through said spray nozzle; a plurality of solenoid controlled valves connected to a source of liquid dust inhibitor, each of said plurality of solenoid controlled valves associated with an individual spray nozzle of said plurality of spray nozzles; and a means to concurrently activate in sequential combination said solenoid controlled valves in stepped response to the weight sensed to apply the dust inhibitor to the glass fibers in a stepped percentage by weight to the weight of the glass fibers sensed.

12. A method of applying a dust inhibitor to milled glass fibers comprising the steps of: sensing the weight of milled glass fibers; transporting said glass fibers along a supply tube; positioning a plurality of spray nozzles along said supply tube; and air supply means for constantly applying air pressure through said spray nozzles; connecting a plurality of solenoid controlled valves between a supply of liquid dust inhibitor and each individual spray nozzle of said plurality of spray nozzles; and applying a dust inhibitor to said fibers in a stepped percentage by weight by selectively activating in combination one or more of said plurality of said solenoid controlled valves in stepped response to the weight of glass fibers sensed.

4,542,045
METHOD AND APPARATUS FOR COOLING AND COATING THE INSIDE SEAM OF A WELDED CAN BODY

Jacob J. Boone, Vermilion, and George W. Stoudt, Oberlin, both of Ohio, assignors to Nordson Corporation, Amherst, Ohio

Filed Sep. 29, 1983, Ser. No. 537,102
Int. Cl.[4] B05D *7/22*
U.S. Cl. 427—236 **7 Claims**



1. A method of applying a continuous impervious protective coating in the form of a stripe over a hot longitudinal seam area of can bodies to prevent running and pitting of said coating which method comprises the steps of:

passing said can bodies over a first and a second spray means;

applying a cooling spray of a first material from said first spray means onto said seam area;

spraying from said second spray means an unatomized spray of a coating material onto said seam area in an amount effective to form a stripe of coating material over the seam area; and

wherein said first material is compatible with said coating material.

6. An apparatus for applying a continuous impervious protective coating in the form of a stripe over the longitudinal weld seam areas of a series of can bodies having longitudinal welded seams and moving along a can forming line,

said apparatus adapted to fit within the interior of said can bodies moving along said can forming line;

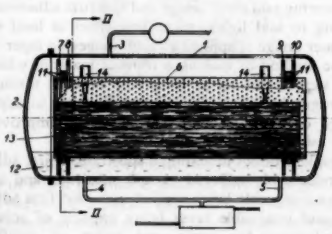
comprising means to spray a coating material from a first and a second orifice, said orifices directing said coating material at the seam areas of can bodies moving past said orifices; and

wherein said first orifice is operable to direct at least a partially atomized spray of coating material upon the seam areas of can bodies moving past said first orifice, and said second orifice is operable to direct an unatomized solid curtain of coating material upon the seam areas of can bodies moving past said second orifices.

4,542,046
IMPREGNATION TANK FOR WOOD

Niels Moldrup, 9 Rytterhegnet, 3450 Allerod, Denmark

Continuation-in-part of Ser. No. 192,383, May 2, 1980, abandoned. This application Jun. 29, 1982, Ser. No. 394,027
Int. Cl.[4] B05D *3/00;* **B27K** *3/08*
U.S. Cl. 427—298 **6 Claims**



1. A method for treatment of a timber in an enclosed vessel capable of sustaining pressure and/or vaccuum, which comprises sequentially:

(a) placing the timber inside of the enclosed vessel;

(b) rotating of said timber inside of said enclosed vessel containing a liquid, about a non-vertical axis of said vessel for at least several full revolutions in a such manner that the liquid content of said vessel is kept at a volume covering less than 100 percent of said timber at least during a part of each rotation;

(c) removing said liquid from said vessel;

(d) draining of said timber inside of said vessel by continuous rotating of said timber inside of said enclosed vessel about non-vertical axis of said vessel;

(e) removing said timber from said chamber.

4,542,047
PROCESS BONDED REINFORCED PLASTIC STRUCTURES

Donald D. Donermeyer, Springfield; Joseph G. Martins, Ludlow, and David A. Fabel, Springfield, all of Mass., assignors to Monsanto Company, St. Louis, Mo.

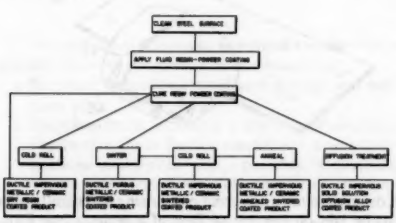
Division of Ser. No. 464,081, Feb. 4, 1983, Pat. No. 4,482,604. This application Oct. 1, 1984, Ser. No. 656,215
Int. Cl.[4] B05D *1/36, 3/02, 7/00*
U.S. Cl. 427—374.4 **9 Claims**

1. A process for bonding a first reinforced plastic part to a second reinforced plastic part, which comprises applying a primer coating solution to the bonding surfaces, evaporating solvent from the primer coating to provide a film of dry primer, placing the first reinforced plastic part in a fixture adapted to hold the first-reinforced plastic part, applying a molten thermoplastic adhesive to the primed surface of the first reinforced plastic part, mating the second reinforced plastic part to the first reinforced plastic part to form a bond, retaining the second reinforced plastic part in the fixture against the first reinforced plastic part by application of a pressure of at least 20 kPa substantially uniformly over the bond, and cooling the bonded parts to allow the bond to set, wherein the primer coating comprises an epoxidized novolac resin and a resinous amidopolyamine in a weight ratio in the range of about 2:1 to about 1:2, and wherein the thermoplastic adhesive is a block copolymer comprising 40 to 80 wt % crystalline polyester or polyamide segments and from 20 to 60 wt % amorphous polyamide or polyether segments, and has a crystalline melting point above 155° C. and a number average molecular weight in the range of about 8000 to about 30000.

4,542,048
POWDER METAL AND/OR REFRACTORY COATED FERROUS METALS

Richard A. Nickola, Highland; Brian A. Sok, Cedar Lake, and Shashi B. Agarwal, Griffith, all of Ind., assignors to Inland Steel Company, Chicago, Ill.

Filed Jul. 7, 1983, Ser. No. 511,570
Int. Cl.[4] B05D *3/02*
U.S. Cl. 427—380 **13 Claims**



1. A method of coating a low alloy steel strip with an adher-

ent protective metal coating which is deformable at room temperature and resistant to oxidation at elevated temperatures comprising:

(a) applying to a clean surface of a titanium-containing low alloy low carbon steel strip a uniform wet film coating of a finely divided protective metal uniformly dispersed in a synthetic resin binder composition comprised essentially of a synthetic resin and a solubilizing volatilizable organic solvent compatible with said resin;

(b) said finely divided protective metal being selected from the group consisting of aluminum powder, a mixture of aluminum powder and 5–12 wt.% silicon powder, a powder alloy of aluminum and 5–12 wt.% silicon, and a mixture of aluminum powder and zinc;

(c) said protective coating metal comprising between about 80 and 88 percent by volume of said wet film and said wet film having a thickness sufficient to form a dry film coating of between about 17.5 μm and 37 μm;

(d) heating said wet film coating at a temperature which effects volatilizing said solvent and curing said resin to form a flexible dry film on the surface of said strip; and

(e) heating said dry film in a non-oxidizing atmophere at an elevated temperature which avoids significantly increasing the grain size of said steel strip for a period sufficient to form an adherent protective surface coating which is deformable at room temperature and which directly contacts the surface of the steel strip without an intervening layer in contact with the steel strip.

4,542,049

FLEXIBILIZED POLYURETHANE PIPE COATING

Gary A. Tolhurst, Worthington, and Albert L. Haugse, Columbus, both of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Aug. 28, 1984, Ser. No. 645,026

Int. Cl.⁴ C08G *18/38*

U.S. Cl. 427—388.1 **5 Claims**

1. A method for coating a metal pipe with a flexible coating composition which comprises:

applying to said metal pipe a coating composition which comprises (a) a blend of between about 76 and 92 weight percent of one or more polyether polyols and between about 24 and 8 weight percent of a flexibilizing sterically-hindered amine-initiated polyether polyol and (b) a multi-isocyanate curing agent, said coating composition curing within about 1 to 3 minutes after its application and the cured film of said coating composition passing a 15 percent ring deflection test on said metal pipe.

4,542,050

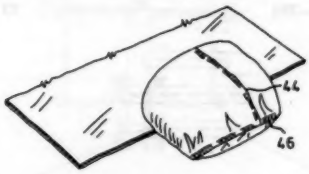
DISPOSABLE TABLE COVERING

Mark U. Gallant, 24 Purnell Dr., Hamilton, Ontario, Canada L9C 4Y2

Filed Apr. 20, 1984, Ser. No. 602,306

Int. Cl.⁴ B32B *3/04*

U.S. Cl. 428—35 **10 Claims**



1. A disposable table covering comprising a generally planar sheet to be lain on the top surface of a table, a bag formed integrally with said sheet and being connected therewith along a portion of one edge of the sheet, said bag having its mouth adjacent said edge and the bottom of the bag being remote from said edge, the girth of the bag being substantially equal to the length of said edge and said portion of said edge being not greater than one-half of the girth of the bag.

4,542,051

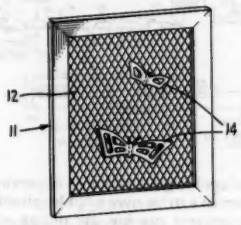
VARIABLE COLLAGE

Alfred P. Cirimele, 844 Solana Dr., Lafayette, Calif. 94549

Filed Dec. 5, 1983, Ser. No. 557,840

Int. Cl.⁴ B32B *15/02*

U.S. Cl. 428—39 **6 Claims**



1. A variable collage device, comprising:

a panel of expanded metal having diamond shaped openings therethrough and having an inherent tendency to curl,

a rigid frame attached to the edges of said panel and formed for holding said panel substantially flat,

and mounting means adapted to be secured to a variety of art objects and having hooked portions selectively and releasably engageable with said panel at desired positions.

4,542,052

TRANSFER IMAGING SYSTEMS

Philip Shadbolt, and Graham E. Cassey, both of Ashford, England, assignors to Esselte Pendaflex Corporation, Garden City, N.Y.

Filed May 17, 1983, Ser. No. 495,469

Claims priority, application United Kingdom, May 18, 1982, 8214434

Int. Cl.⁴ B41M *5/00*

U.S. Cl. 428—40 **14 Claims**

1. Transfer material comprising:

an imageable product including a substrate, a first adhesive layer releasably adhered to said substrate, and a non-adhesive imageable layer applied over said first adhesive layer, said imageable layer being capable of accepting electrophotographic toner and being of insufficient strength to be stripped from said substrate, to which said imageable layer is releasably adhered by said first adhesive layer, from a corner of said imageable layer without fracture, and an electrophotographic toner image applied to said imageable layer; and

a light-transmitting sheet adherent to said imageable layer bearing said toner image, whereby said substrate and said light-transmitting sheet are separable, with said imageable layer bearing said toner image and said first adhesive layer adhering to said light-transmitting sheet at least where said toner image is applied to said imageable layer.

14. In the method of making a transfer material which includes the step of passing an imageable product through an electrophotographic copying apparatus in order to deposit a toner image on said imageable product, the improvement comprising using a transfer material having

an imageable product including a substrate, a first adhesive layer releaseably adhered to said substrate, and a non-adhesive imageable layer applied over said first adhesive layer, said imageable layer being capable of accepting electrophotographic toner and being of insufficient strength to be stripped from said substrate, to which said imageable layer is releaseably adhered by said first adhe-

sive layer, from a corner of said imageable layer without fracture, and an electrophotographic toner image applied to said imageable layer; and

a light-transmitting sheet adherent to said imageable layer bearing said toner image, whereby said substrate and said light-transmitting sheet are separable, with said imageable layer bearing said toner image and said first adhesive layer adhering to said light-transmitting sheet at least where said toner image is applied to said imageable layer.

4,542,053

BONDING SYSTEM FOR WEAR SURFACES

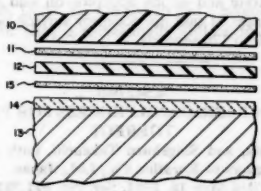
Norman Nevins, Dayton; Robert L. McVay, Cincinnati, and Carmen L. Bellanca, Centerville, all of Ohio, assignors to Protective Treatments, Inc., Dayton, Ohio

Continuation-in-part of Ser. No. 234,909, Feb. 17, 1981, Pat. No. 4,403,005. This application Jul. 27, 1983, Ser. No. 517,539

The portion of the term of this patent subsequent to Sep. 3, 2000, has been disclaimed.

Int. Cl.⁴ B32B *25/14, 25/18*

U.S. Cl. 428—48 **6 Claims**



1. A wear surface having a wear-resistant overlay bonded thereto by means of an elastomer layer having a Shore 00 hardness of approximately 78 to 90, said elastomer layer being compounded with a stiffening filler in an amount at least equal to about half the weight of the elastomer, and low volatile liquid plasticizer in an amount sufficient to provide the stated hardness.

4,542,054

MOLDED COMPOSITE POLYMERIC BODY WITH ANTI-STATIC PROPERTIES AND PROCESS FOR MAKING SAME

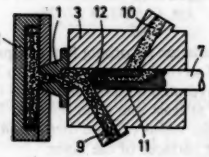
Werner Fillmann, Hilchenbach, Fed. Rep. of Germany, assignor to Battenfeld Maschinenfabrik GmbH, Meierzhagen, Fed. Rep. of Germany

Filed Oct. 13, 1983, Ser. No. 541,682

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1982, 3238090

Int. Cl.⁴ B32B *3/00, 5/16, 5/18, 5/30*

U.S. Cl. 428—68 **19 Claims**



1. A composite polymeric body comprising a homogeneous skin of a first polymeric material surrounding a core of a second polymeric material, and a filler of electrically conductive particles distributed at least throughout an interface of said skin and said core in a thin antistatic electronic shielding and induction protection layer bounded by said skin.

4,542,055

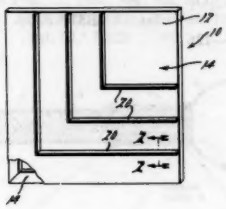
THREE-DIMENSIONAL FABRIC PAINTING SURFACES

Christine M. Fitzsimmons, Rochester, Mich., assignor to Conceptual Arts, Ltd., Rochester, Mich.

Filed Oct. 19, 1983, Ser. No. 543,165

Int. Cl.⁴ B32B *3/06, 3/30*

U.S. Cl. 428—102 **5 Claims**



1. A sculptured fabric comprising a backing member, a layer of fabric material generally describing a plane and secured to said backing member, and at least two raised edge means formed on said fabric material by folding said fabric material so that two layers of said material are positioned adjacent to each other, said two layers being securedly held together to define a free standing ridge generally perpendicular to said plane, and at least two of said raised ridge means having different heights and formed in a prospecified geometric pattern on said material.

4,542,056

COMPOSITE STRUCTURE HAVING CONDUCTIVE SURFACES

Jeanne M. Anglin, Kent; Richard R. Edwards, Bellevue, and John E. Thomas, Kent, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 526,838, Aug. 26, 1983. This application Sep. 15, 1983, Ser. No. 532,324

Int. Cl.⁴ B32B *3/12;* **B64C** *1/00*

U.S. Cl. 428—116 **3 Claims**

1. A conductive composite structural member for use in an aircraft structure comprising in combination:

a fiberglass honeycomb core having inner and outer fiberglass plies;

a fiberglass fabric including a plurality of electrically non-conductive fibers having electrically conductive surface portions interwoven with a plurality of electrically non-conductive fibers having electrically conductive surface portions;

said fiberglass fabric having a 5-harness satin weave; and,

said fiberglass fabric disposed against a surface portion of said inner or outer fiberglass plies.

4,542,057

HAMMOCK

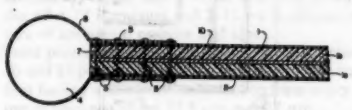
Hans-Ulrich Breitscheidel, Siegburg; Walter H. Anshen, Cologne, and Rudolf Kautz, Hennef, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Dec. 4, 1984, Ser. No. 678,045

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1983, 8336302[U]

Int. Cl.[4] B32B *3/04*

U.S. Cl. 428—126 10 Claims



1. A hammock having a mat portion and a loop-shaped arrangement at the head and foot ends of the mat portion to accommodate mounting dowels, said mat portion comprising an elastic crosslinked synthetic resin foam sheet, reinforced with a flat textile layer of organic and/or inorganic fibers, threads, strips, or the like, said sheet having a tensile strength of at least 0.20 N/mm^2, a tear propagation resistance of at least 1.0 N/mm, and an ultimate elongation of at least 80%, with a gross density of about 30–130, preferably 30–80 kg/m^3.

4,542,058

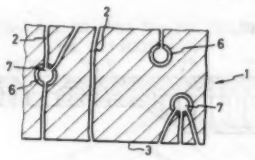
FREEZE-THAW STABLE STONEWARE TILE AND PROCESS FOR PRODUCTION THEREOF

Shigetaka Fukuoka, No. 1745-2, Mita, Ueno-shi, Mie, Japan

Filed Dec. 27, 1983, Ser. No. 565,692

Int. Cl.[4] B32B *3/10*

U.S. Cl. 428—134 19 Claims



1. Freeze-thaw stable fired stoneware tile which includes, in its tile body having water absorption of about 0.5 to about 10%, a multiplicity of relatively coarse discontinuous pores having a pore diameter substantially in the range of about 0.6 to about 100 microns and exhibiting no substantial capillary action, and a multiplicity of continuous micropores having a pore diameter of not more than about 0.3 micron and exhibiting substantial capillary action, said relatively coarse pores being communicated with the continuous micropores, and said continuous micropores being communicated with the outside of the tile body.

4,542,059

RECORDING MEDIUM

Shigeo Toganoh, and Ryuichi Arai, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 17, 1983, Ser. No. 523,884

Claims priority, application Japan, Aug. 23, 1982, 57-145882; Aug. 23, 1982, 57-145883; Aug. 23, 1982, 57-145884; Aug. 23, 1982, 57-145885; Sep. 3, 1982, 57-152807

Int. Cl.[4] B41M *5/00*

U.S. Cl. 428—141 34 Claims

1. A recording medium for recording with ink, which comprises a substrate and an ink acceptor on said substrate, the Bekk smoothness of said ink acceptor surface being within a range from 20 to 120 seconds.

4,542,060

NONWOVEN FABRIC AND PROCESS FOR PRODUCING THEREOF

Seiichi Yoshida, and Shigekazu Takeuchi, both of Okayama, Japan, assignors to Kuraflex Co., Ltd., Japan

Filed May 18, 1984, Ser. No. 611,781

Claims priority, application Japan, May 26, 1983, 58-93476

Int. Cl.[4] B32B *27/34*

U.S. Cl. 428—287 11 Claims

1. A laminated nonwoven fabric which comprises a web mainly composed of a fiber having a high melting point or being hardly softened or molten designated as laminate ply A, and at least one web mainly composed of a thermoplastic fiber being soften or molten more easily than the fiber of the laminate ply A and provided on at least one surface of the laminate ply A designated as laminate ply B, said ply B being integrally bound to said ply A by steric entanglement of both fibers composing the plys A and B as well as partial softening or melting of the fibers composing the ply B.

4,542,061

PLASTIC FILM

Nobuo Fukushima, Honmachi; Shuji Kitamura, Ibaraki; Kiyohiko Nakae, Nishinomiya; Kozo Kotani, Toyonaka; Takayuki Terazawa, Shiga, and Toyoaki Nakarai, Minoo, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jan. 11, 1983, Ser. No. 457,153

Claims priority, application Japan, Jan. 27, 1982, 57-12129

Int. Cl.[4] B32B *27/08*

U.S. Cl. 428—220 8 Claims

1. An infrared radiation absorbing film comprising a layer of 100 weight parts of an olefin resin (A) and 2 to 25 weight parts of an amorphous hydrated aluminosilicate gel (B) and at least one other layer of at least one resin selected from the group consisting of ionomer resins (C) and olefin resins (D) being on the inner and outer surfaces of the layer,

wherein the amorphous hydrated aluminosilicate gel and olefin resin (A) in the layer have a ratio of refractive index n_A of the olefin resin (A) to refractive index n_B of the amorphous hydrated aluminosilicate gel, (n_A/n_B), within the range of from 0.99 to 1.02, and the amorphous hydrated aluminosilicate gel has the following composition:

$$(SiO_2)_x\text{-}(Al_2O_3)_y\text{-}(M_2O)_z\text{-}n\ H_2O$$

wherein M represents an alkali metal, $0.14 \leqq y/x \leqq 0.33$, $0.2 \leqq z/y \leqq 1.6$, and n is zero or a positive number.

4,542,062

MAGNETIC RECORDING MEDIUM

Kazuo Takada, and Seitoku Saito, both of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Jan. 20, 2982, Ser. No. 341,059
Claims priority, application Japan, Mar. 7, 1981, 56-32764; Mar. 12, 1981, 56-34601
Int. Cl.[4] G11B *5/64*
U.S. Cl. 428—336 2 Claims

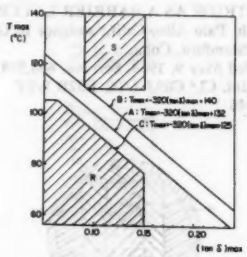
1. A magnetic recording medium which comprises a magnetic alloy layer on a substrate wherein said magnetic alloy layer is made of 70–90 wt.% of Co and 30–10 wt.% of at least one of Si, Sb, Li, V, Ta, Ge and Pt and a magnetization axis of said magnetic alloy is substantially vertical to said layer.

4,542,063

UNIFORMLY DYEABLE NYLON 66 FIBER AND PROCESS FOR THE PRODUCTION THEREOF

Hiroshi Tanji, Fuji; Michitaka Iwata, Minoo, and Hideo Sato, Nobeoka, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 350,417, Feb. 19, 1982, abandoned. This application Sep. 18, 1984, Ser. No. 651,646
Claims priority, application Japan, Feb. 26, 1981, 56-26129; Mar. 17, 1981, 56-37242
Int. Cl.[4] D02G *3/00*
U.S. Cl. 428—364 10 Claims



1. A fiber consisting essentially of nylon 66 capable of being uniformly dyed and having an initial modulus at 20° C. and a relative humidity of 60% of about 15 g/d to about 65 g/d and a relationship of a peak temperature (T_{max}(°C.)) at peak of dynamic mechanical loss tangent (tan δ) measured with a frequency of 110 Hz and a peak value of the dynamic mechanical loss tangent ((tan δ)$_{max}$) represented by the equation:

$$T_{max}(°C.) \leqq [=] -320(\tan \delta)_{max} + 132[125]$$

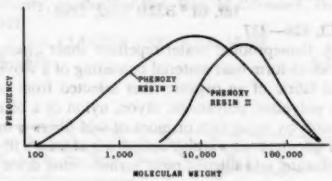
wherein the T_{max}(°C.) is about 80° C. to about 105° C.

4,542,064

SELF-BONDING ENAMELED WIRE AND HERMETIC COMPRESSOR MOTOR USING THE SAME

Sueji Chabata, Tokyo; Keiji Nakano, Inagi; Kichizo Ito, Chiba; Katsuhiko Ueda, Kashiwa; Hirokazu Iizuka, Susono; Hisao Miyako, Shizuoka, and Katsumi Fukagawa, Fujinomiya, all of Japan, assignors to Fujikura Ltd., Tokyo and Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, both of, Japan

Filed Feb. 23, 1984, Ser. No. 582,729
Claims priority, application Japan, Feb. 28, 1983, 58-32277
Int. Cl.[4] B32B *27/08*
U.S. Cl. 428—383 12 Claims



1. A self-bonding enameled wire having an electric insulation layer coated thereon and a bonding layer coated over the insulation layer, characterized in that the bonding layer is prepared with a mixture including:

(a) 100 parts by weight of a phenoxy resin and/or an epoxy resin, both the resins containing not larger than 5 ppm of sodium chloride and having a limiting viscosity of not less than 0.440 as measured in tetrahydrofuran solvent at 25° C.; and

(b) 20 to 100 weight parts of a n-butylated melamine resin.

4,542,065

CHEMICALLY TREATED GLASS FIBERS AND STRANDS AND DISPERSED PRODUCTS THEREOF

Peter C. Gaa, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 21, 1984, Ser. No. 612,536
Int. Cl.[4] B32B *9/00*; D02G *3/00*; C08G *77/04*
U.S. Cl. 428—391 33 Claims

1. Glass fibers treated with an aqueous chemical composition, comprising:

a. an aqueous dispersion of a polyurethane resin having pendant silyl groups, where at least one siliconate anion is present for a majority of the silyl groups, and one or more external dispersing agents present in an effective dispersing and lubricating amount, wherein the pH of the aqueous dispersion is greater than around 7 when the silyl concentration of the polymer is greater than around 0.1 weight percent of the water in the dispersion, and

b. water to give a total solids for the aqueous chemical treating composition so that glass fibers can be treated with the aqueous chemical treating composition.

4,542,066

MODIFYING GLASS BEAD SURFACES

Marcel Delzant, Mont-sur-Marchienne, Belgium, assignor to Glaverbel, Brussels, Belgium

Filed Sep. 12, 1983, Ser. No. 531,453
Claims priority, application United Kingdom, Sep. 14, 1982, 8226106
Int. Cl.[4] B05D *7/00*; C03B *27/00*; C03C *15/00, 17/00*
U.S. Cl. 428—406 16 Claims

1. A method of modifying the surface of hollow glass beads, comprising treating the beads with a solution containing an effective amount of at least one of an organic acid selected from beta-hydroxy acids, oxalic acid and ethylene diamine tetraacetic acid, and a salt of said organic acid.

14. Hollow glass beads treated by the method according to claim 1.

4,542,067

FLAMEPROOFED WATER-REPELLENT WOVEN OR KNITTED SHEET COATED WITH SILICONE CONTAINING FIBROUS POTASSIUM TITANATE

Osamu Yamamoto; Hideaki Suda, both of Chiba; Kihachiro Nishiuchi, Tokushima; Misao Izumi, Toyonaka, and Noriyoshi Ejima, Tokushima, all of Japan, assignors to Nitto Boseki Co., Ltd., Fukushima, Japan

Filed Apr. 23, 1984, Ser. No. 603,135

Claims priority, application Japan, Apr. 28, 1983, 58-75569

Int. Cl.⁴ B32B *5/02, 5/06*

U.S. Cl. 428—237 **3 Claims**

1. A flameproofed water-repellent sheet characterized in that a sheet-form base material consisting of a woven fabric or knitted fabric of an organic fiber selected from cotton, flax, ramie, polyester, polyamide, rayon, nylon or a blended fabric obtainable by using two or more of said fibers is impregnated with a silicone resin varnish containing at least a fibrous potassium titanate, said silicone resin varnish being dried and cured.

4,542,068

METHOD OF MAKING GLASS FIBER MAT

Matthew C. Whichard, Morris Plains, N.J., assignor to GAF Corporation, Wayne, N.J.

Filed May 18, 1984, Ser. No. 611,576

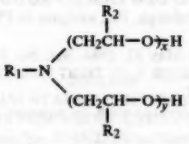
Int. Cl.⁴ D21F *11/00;* **D21H** *5/18*

U.S. Cl. 428—290 **5 Claims**

1. A method of making glass fiber mat having improved tensile strength properties comprising:

(a) forming a wet mat of a plurality of enmeshed, sized glass fibers in a wetlaid process;

(b) coating the fibers of said wet mat with a binder composition consisting essentially of urea-formaldehyde and alkoxylated alkyl amine of the formula



wherein R_1 is an alkyl group containing from 8 to about 30 carbon atoms, each R_2 is independently H or CH_3, and x+y is an integer from 2 to about 50; and

(c) drying the glass mat having the binder thereon.

4,542,069

VINYLENE CARBONATE POLYMERS, A PROCESS FOR THEIR PREPARATION AND THEIR USE

Otto Maüz, Liederbach; Klaus Sauber, Bad Soden am Taunus, and Siegfried Noetzel, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 23, 1983, Ser. No. 554,637

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1982, 3243591

Int. Cl.⁴ C08F *218/24;* **B32B** *5/16*

U.S. Cl. 428—402 **12 Claims**

1. A polymer essentially composed of units which are derived from vinylene carbonate or a derivative thereof which is substituted by a monovalent hydrocarbon radical having up to 8 carbon atoms, and of at least one other monomer which can be copolymerized with it, the mean particle size of the polymer particles being in the range from 20 to 800 um, wherein the polymer particles have an essentially spherical shape and a mean pore diameter of 5 to 1,000 nm.

4,542,070

PROCESS FOR ADHERING POLYURETHANE ELASTOMER TO METAL

Masaaki Ohtani, Yokohama; Takao Harada; Yoshijiro Oyaizu, both of Shizuoka, and Tatsuhiko Kobayashi, Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries Ltd. and Ihara Chemical Industry Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 373,108, Apr. 29, 1982, abandoned.

This application Apr. 9, 1984, Ser. No. 602,081

Claims priority, application Japan, May 8, 1981, 56-69131

Int. Cl.⁴ B32B *15/08;* **C09J** *5/04*

U.S. Cl. 428—416 **7 Claims**

1. A process for adhering polyurethane elastomer to metal, which comprises:

coating the surface of the metal with a composition-A containing a polyepoxy compound, a polyamine compound and a silane coupling agent;

drying the thus coated surface of the metal;

further coating the dried surface of the metal with a composition-B containing an isocyanate compound having a concentration of isocyanate groups of 15-50% by weight and at least one compound selected from the group consisting of polyester and polyurethane, each having a weight average molecular weight of more than 10,000;

drying the thus double-coated surface of the metal;

casting a raw material for a polyurethane elastomer onto the thus dried surface of the metal; and

hardening said cast raw material.

4,542,071

LUBRICATED MAGNETIC RECORDING DISK

Andrew M. Homola, Morgan Hill, and Heinrich Sussner, Monte Sereno, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 14, 1983, Ser. No. 513,897

Int. Cl.⁴ B32B *9/00*

U.S. Cl. 428—428 **2 Claims**

1. A magnetic recording disk characterized by a lubricant overcoat of a permanently bound monolayer of silica spheres about 7 nm in diameter, and on top of said monolayer a skin-like film of amorphous silica about 2 to 13 nm thick.

4,542,072

PROCESSING SILICON NITRIDE BY USE OF BORON NITRIDE AS A BARRIER LAYER

Martin Y. Hsieh, Palo Alto, Calif., assignor to GTE Products Corporation, Stamford, Conn.

Filed May 9, 1984, Ser. No. 608,598

Int. Cl.⁴ C09J *1/00;* **B32B** *9/04*

U.S. Cl. 428—446 **8 Claims**

2. An article consisting essentially of body consisting essentially of from about 80% to about 97.5% by weight of silicon nitride and from about 2.5% to about 20% of a sintering aid selected from the group consisting of yttrium oxide, aluminum oxide, magnesium oxide, lanthanum oxide and mixtures thereof and a coating having a thickness of from 0.5 to about 10 mils of boron nitride relatively uniformly distributed over the surface of said body.

4,542,073

CERAMIC BONDED STRUCTURE AND METHOD OF MANUFACTURING THE SAME

Shun-ichiro Tanaka; Nobuyuki Mizunoya, and Shigeo Abe, all of Yokohama, Japan, assignors to Thomson CSF, Paris and Compagnie d'Electronique et de Piezo-Electricite, Sartrouville, both of, France

Filed Apr. 12, 1984, Ser. No. 599,579
Claims priority, application Japan, Apr. 13, 1983, 58-63676
Int. Cl.[4] B32B *9/04;* C09J *1/00*
U.S. Cl. 428—446 31 Claims

1. A ceramic bonded structure comprising a first member of a ceramic, a ceramic-modified bonding layer formed on at least a bonding surface of said first member, a metal layer formed on said ceramic-modified bonding layer, and a second member bonded to said first member through said metal layer.

4,542,074

SURFACE METALLIZED SEMICONDUCTORS

Kirkor Sirinyan; Rudolf Merten, both of Leverkusen; Gerhard D. Wolf, Dormagen; Henning Giesecke, Cologne; Uwe Claussen, and Harold Ebneth, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 457,554, Jan. 13, 1983, Pat. No. 4,472,458. This application Jun. 11, 1984, Ser. No. 618,973
Claims priority, application Fed. Rep. of Germany, Jan. 27, 1982, 3202484
Int. Cl.[4] B32B *15/04;* B05D *5/12*
U.S. Cl. 428—450 3 Claims

1. Semiconductors metallised on the surface, characterised in that the metal layer is applied, without previous pickling, by activating with organometallic compounds of metals of Groups IB and VIII of the Periodic Table of Elements, by reduction and currentless wet-chemical metallisation.

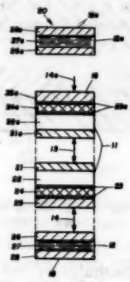
2. Metallised semiconductors according to claim 1, wherein the semiconductors consist essentially of silicon, germanium, gallium, arsenic, IIIA-VA or IIB-VIA compounds.

4,542,075

HIGH BARRIER SHRINK FILM

Henry G. Schirmer, Spartanburg, S.C., assignor to W. R. Grace & Co., Cryovac Div., Duncan, S.C.

Filed Oct. 3, 1983, Ser. No. 538,738
Int. Cl.[4] B32B *27/30, 27/08*
U.S. Cl. 428—516 7 Claims



1. A heat shrinkable, high barrier laminate film comprising: a hot blown, melt oriented high oxygen barrier film including a layer of vinylidene chloride copolymer laminated to a stretch oriented base film including a layer of polyethylene having a heat shrink tension substantially greater than that of said barrier film, the ultimate elongation of said barrier film being substantially less than that of said base film before orientation and the extent of orientation of said base film being sufficient such that its ultimate elongation is reduced so as not to substantially exceed that of said barrier film.

4,542,076

METALLIZED MOLDED PLASTIC COMPONENT HOUSINGS FOR SHIELDING AGAINST ELECTROMAGNETIC INTERFERENCE FIELDS

Jürgen Bednarz, Penzberg, and Wolfgang Lindig, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 24, 1983, Ser. No. 544,885
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1982, 3248147
Int. Cl.[4] C23F *1/00;* B32B *15/08*
U.S. Cl. 428—624 6 Claims

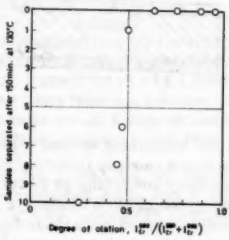
1. Molded pieces of heat shrinkable plastic material having at least a partial metal coating of their surfaces, said surfaces being roughened up through pretreatment, and including a cover layer applied over said metal coating comprising a hot melt adhesive which softens under the influence of heat.

4,542,077

TIN-FREE STEEL SHEETS HAVING IMPROVED LACQUER ADHESION

Hajime Ogata; Yoshiharu Ohashi; Shunichi Tsugawa; Toshio Ichida, and Toshio Irie, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

PCT No. PCT/JP84/00021, § 371 Date Aug. 2, 1984, § 102(e) Date Aug. 2, 1984, PCT Pub. No. WO84/02931, PCT Pub. Date Aug. 2, 1984
PCT Filed Jan. 27, 1984, Ser. No. 641,943
Claims priority, application Japan, Jan. 28, 1983, 58-13047
Int. Cl.[4] C25D *11/38, 3/04*
U.S. Cl. 428—629 1 Claim



1. A tin-free steel sheet having metallic chromium and chromium oxide coatings on a steel sheet, characterized in that for improved lacquer adhesion, $I_{Cr}^{580}/(I_{Cr}^{580}+I_{Cr}^{660})$ has a value of 0.5 or more provided that I_{Cr}^{580} is the percent transmission corresponding to ol linkage and I_{Cr}^{660} is the percent transmission corresponding to oxo linkage in the infrared absorption spectrum of said chromium oxide coating as measured by Fourier transform infra-red spectroscopy (FTIR).

4,542,078

TRANSFER SHEET BEARING A THERMALLY TRANSFERABLE INK COMPOSITION AND ARTICLE MADE THEREFROM

Robert C. Fitzer, Mahtomedi; Frank L. Deyak, and Charles J. Fabbrini, both of Stillwater, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 163,884, Jun. 27, 1980, Pat. No. 4,513,107.
This application Jan. 14, 1985, Ser. No. 691,065
Int. Cl.[4] B41M 5/26
U.S. Cl. 428—914 24 Claims

1. A transfer sheet comprising a dimensionally stable carrier having a dry layer of a thermally-transferable ink composition, said carrier being strippable from said dry layer, wherein said ink composition has a 20% elongation temperature of less than about 85° C. and an elongation at break of at least about 15%, said ink composition comprising:

(a) from about 50 to 95% by weight of a thermoplastic polymer selected from the group consisting of polyvinyl chloride, copolymers thereof, and blends thereof;

(b) from about 50 to 5% by weight of a flexibilizer for said thermoplastic polymer that is compatible with said thermoplastic polymer; and

(c) up to about 40% by weight of a colorant

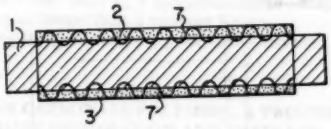
wherein said composition is thermally transferable from a carrier to a receptor at a temperature in the range of 75° C. to 110° C.

4,542,079

FUEL CELL

Masato Takeuchi, Katsuta; Hiroshi Tobita, Kitaibaraki; Sigeru Okabe, Hitachi; Hideo Okada, Hitachi, and Munehiko Tonami, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 461,217, Jan. 26, 1983, abandoned. This application Dec. 13, 1984, Ser. No. 681,247
Claims priority, application Japan, Jan. 29, 1982, 57-14015
Int. Cl.[4] H01M 8/02
U.S. Cl. 429—39 14 Claims



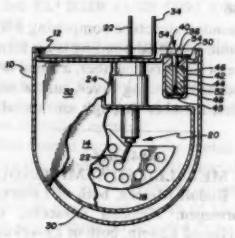
1. A fuel cell comprising at least a pair of electrodes of electron conductive catalytic refractory material and at least an electrolyte body comprising an electrolyte-retainable porous, refractory, non-electron conductive, inorganic material and an electrolyte retained in the electrolyte-retainable porous material, the electrolyte body being provided between the pair of the electrodes, an oxidizing agent passage means for supplying an oxidizing agent to one of the electrodes, a fuel passage means for supplying a fuel gas to the other electrode, wherein an improvement comprises the electrolyte body being integrated with at least one of the pair of the electrodes through an intermediary provided between at least one of the pair of the electrodes and the electrolyte body, the intermediary being embedded in both the at least one of the electrodes and the electrolyte body.

4,542,080

FILLING SYSTEM FOR HERMETICALLY SEALED BATTERIES

Gary M. Phillips, Vadnais Heights, and Albert S. Benjamin, White Bear Lake, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Feb. 13, 1984, Ser. No. 579,787
Int. Cl.[4] H01M 2/08, 2/36
U.S. Cl. 429—174 5 Claims



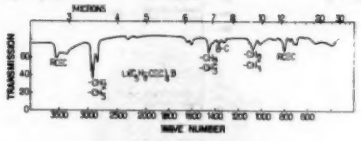
1. In an electrochemical cell of the type having a container for housing cell components, an opening in the container for introducing fluid components into the container, and means closing the container opening, the improvement comprising polymeric plug means carried in the opening for closing it, the plug means comprising a polymer body having a relatively small opening extending therethrough whereby a fluid component may be introduced into the container by insertion of a hypodermic-like needle into the plug means opening, and a tapered metal plug inserted into the opening in the polymeric body for closing it, and additional means securing the metal plug in the opening.

4,542,081

TETRA-ALKYNYL OR -ALUMINATES OF ALKALI METALS, THEIR SOLID SOLUTIONS WITH PLASTIC MATERIALS AND THEIR USE FOR THE CONSTITUTION OF CONDUCTOR ELEMENTS FOR ELECTROCHEMICAL GENERATORS

Michel B. Armand, Nancy, France, and Fouzia El Kadiri Cherkaoui El Moursli, Sale, Morocco, assignors to Agence Nationale de Valorisation de la Recherche, Paris and Societe Nationale Elf Aquitaine, Courvevoie, both of, France

Filed Jun. 1, 1983, Ser. No. 500,191
Claims priority, application France, Jun. 1, 1982, 82 09538
Int. Cl.[4] H01M 4/62, 6/18
U.S. Cl. 429—192 19 Claims



1. Solid solution constituted by one or several ionic compounds of the formula:

$$(R-C{\equiv}C)_4X^-, M^+$$

in which:

X is a trivalent element liable of entering into 4-coordination;

the groups R are aprotic hydrocarbon radicals, that is to say radicals which are non proton donors;

M is an alkali metal

entirely dissolved within a macromolecular material formed at

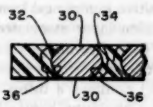
least in part by a polymer the monomer units of which include at leaast one hetero-atom, adapted to form bonds of the donor-acceptor type with the cation of the ionic compound.

4,542,082

BIPOLAR BATTERY PLATE

John J. Rowlette, Monrovia, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Feb. 8, 1982, Ser. No. 346,414
Int. Cl.⁴ H01M *6/48*
U.S. Cl. 429—210 **9 Claims**



1. A fluid impervious plate for use as a substrate plate for a storage battery electrode comprising:

a thin sheet of organic resin insulator having flat first and opposed faces and including a series of spaced, disconnected apertures extending from said first face to said opposite face; and

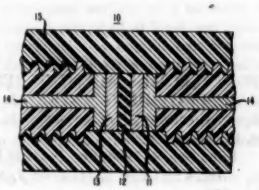
a fluid-impervious conductor element consisting of metal having a spherically shaped side profile and flat first and second end surfaces sealingly received in each aperture; each conductor element being disconnected from every other conductor element and having said first and second end surfaces coincident with and exposed to said faces.

4,542,083

NONAQUEOUS CELL USING MIXED METAL OXIDE POSITIVE ELECTRODE

Robert J. Cava, Millington, and Donald W. Murphy, Warren, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 383,820, Jun. 1, 1982, abandoned. This application Jun. 11, 1984, Ser. No. 618,777
Int. Cl.⁴ H01M *4/58*
U.S. Cl. 429—218 **14 Claims**



1. A nonaqueous cell comprising a negative electrode, an electrolyte and a positive electrode, said positive electrode active material comprising material of at least one Wadsley phase having the nominal atom composition $xM^{A}O_2.yM_2{}^{B}O_5.zM^{C}O_3$, at least two of x, y, and z are nonzero, $x+y+z=1.0$ and at least two metal elements M are present, wherein

M^{A} is at least one element selected from the group consisting of the elements of Groups IVB, VB and VIB of the periodic table,

M^{B} is at least one element selected from the group consisting of the elements of Groups VB and VIB of the periodic table, and

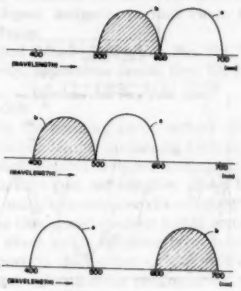
M^{C} is at least one element selected from the group consisting of the elements of group VIB of the periodic table.

4,542,084

METHOD FOR FORMING A COLORED IMAGE

Haruo Watanabe; Junetsu Seto, both of Kanagawa; Kiyosuke Suzuki, Saitama, and Toshiaki Fukuma, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 25, 1984, Ser. No. 634,151
Int. Cl.⁴ G03G *13/01*
U.S. Cl. 430—46 **8 Claims**



1. A method for forming a colored image comprising the steps of:

(a) uniformly forming three kinds of photoconductive toners on a substrate, each of said photoconductive toners having an absorption wavelength band corresponding to one of red, green and blue light components of a natural light, each of said photoconductive toners having a sensitization wavelength band corresponding to one of red, green and blue light components of the natural light, and each of said photoconductive toners having said absorption wavelength band and said sensitization wavelength band different from each other;

(b) uniformly charging said photoconductive toners;

(c) obtaining three colors corresponding to three primary colors, that is, red, green, blue, from an original image to be reproduced;

(d) converting said three primary colors into three primary colors mutually different therefrom;

(e) exposing said photoconductive toners to a light with each of the converted three primary colors for selectively removing charges from a portion of said photoconductive toners; and

(f) removing toners freed of charges from said substrate.

4,542,085

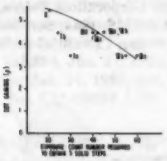
NEGATIVE WORKING DIAZO LIGHT-SENSITIVE COMPOSITION WITH OXONOL DYE AND LITHOGRAPHIC PRINTING PLATE USING THE SAME

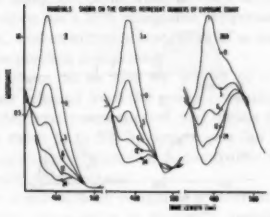
Hiroshi Takahashi; Akira Nishioka; Fumihiro Tokunaga, all of Shizuoka; Yoshimasa Aotani, Kanagawa, and Koichiro Aono, Shizuoka, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

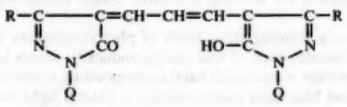
Filed Jun. 2, 1983, Ser. No. 500,601
Claims priority, application Japan, Jun. 2, 1982, 57-94574
Int. Cl.⁴ G03C *1/60*; G03F *7/08, 7/26*
U.S. Cl. 430—158 **18 Claims**

1. A negative working light-sensitive composition comprising an admixture of (a) a light-sensitive diazo compound which contains at least two diazo groups and produces an acidic compound by photo-decomposition, and present in an amount sufficient to form an image after actinic exposure and development and (b) a compound capable of increasing absorption of at least a part of light ranging in the light-sensitive wavelength region of the composition with increasing exposure time, and present in an amount sufficient for increasing said absorption with increasing exposure time, said compound capable of

increasing absorption being presented by the following general formula (I)







(I)

wherein R represents an alkyl group or an alkoxycarbonyl group and Q represents a hydrogen atom or an aryl group or a substituted aryl group, and wherein the light-sensitive wavelength region of the composition is within the wavelength region 350 to 450 nm and compound (b) is one such that it is capable of increasing absorption for the light of the wavelength range from 350 to 450 nm.

9. A negative working light-sensitive lithographic printing plate, comprising:

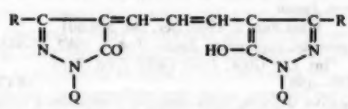
a hydrophilic support having coated thereon:

a negative working light-sensitive layer comprising

a negative working light-sensitive composition comprising:

(a) a light-sensitive diazo compound which contains at least two diazo groups and produces an acidic compound by photodecomposition and present in an amount sufficient to form an image after active exposure and development; and

(b) a compound capable of increasing absorption of at least part of a light ranging in the light-sensitive wavelength region of the composition with increasing exposure time, and present in an amount sufficient for increasing said absorption with increasing exposure time, said compound capable of increasing absorption being represented by the following general formula (I)



(I)

wherein R represents an alkyl group or an alkoxycarbonyl group and Q represents a hydrogen atom or an aryl group or a substituted aryl group, and wherein the light-sensitive wavelength region of the composition is within the wavelength region 350 to 450 nm and compound (b) is one such that it is capable of increasing absorption for the light of the wavelength range from 350 to 450 nm.

4,542,086

COLOR DIFFUSION TRANSFER ELEMENT WITH HYDROQUINONE TYPE COMPOUND

Nobutaka Ohki; Motohiko Tsubota; Masakazu Morigaki, and Tsutomu Hamaoka, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 26, 1981, Ser. No. 266,781

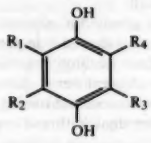
Claims priority, application Japan, May 26, 1980, 55-69972

The portion of the term of this patent subsequent to Jan. 31, 2001, has been disclaimed.

Int. Cl.⁴ G03C *1/40, 5/54*

U.S. Cl. 430—218 **20 Claims**

1. A color diffusion transfer photographic element, comprising: (a) a light sensitive component containing a light sensitive silver halide emulsion layer associated with a dye releasing redox compound; (b) a dye image receiving component; and (c) an alkaline processing composition component, wherein said component (c) contains a diffusible hydroquinone type compound having a gradation controlling effect on the color diffusion transfer element and having a half wave potential of polarography in the range of from −300 mV to −380 mV measured using a saturated calomel electrode as a reference electrode in a buffer solution having a pH of 13.0 at 25° C., wherein the diffusible hydroquinone type compound is represented by the following general formula (I)



wherein R_1, R_2, R_3 and R_4 are independently hydrogen, a halogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted alkoxy group, a substituted or unsubstituted alkylthio group, a substituted or unsubstituted alkenyl group, a cycloalkyl group, a cycloalkoxy group, an aryl group, an acylamino group, a diacylamino group, an acyloxy group, a sulfonamido group, or an alkylamino group, and R_1, R_2, R_3 and R_4 combined contain 0 to 12 carbon atoms.

4,542,087

USE OF REFLECTING AGENT IN YELLOW DYE IMAGE-PROVIDING MATERIAL LAYER

David P. Brust, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 4, 1984, Ser. No. 646,541

Int. Cl.⁴ G03C *5/54, 1/40, 1/84*

U.S. Cl. 430—220 **22 Claims**

9. In a photographic assemblage comprising:

(a) a photosensitive element comprising a support having thereon a red-sensitive silver halide emulsion layer having a cyan dye image-providing material associated therewith, a green-sensitive silver halide emulsion layer having a magenta dye image-providing material associated therewith, and a blue-sensitive silver halide emulsion layer having a yellow dye image-providing material associated therewith; and

(b) a dye image-receiving layer,

the improvement wherein the layer containing said yellow dye image-providing material contains a sufficient amount of a reflecting agent so that the layer is an effective yellow filter layer, said reflecting agent being photographically inert and white or colorless in the visible region of the spectrum.

4,542,088

PHOTOPOLYMERIZABLE COMPOSITIONS AND IMAGE-FORMING MATERIALS USING SAID COMPOSITIONS

Yasuo Kojima, and Nobumasa Sasa, both of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Mar. 10, 1983, Ser. No. 474,023

Claims priority, application Japan, Mar. 18, 1982, 57-41689; Mar. 18, 1982, 57-41690

Int. Cl.⁴ G03C *1/68, 1/70, 1/84*

U.S. Cl. 430—273 16 Claims

11. A water-developable image-forming material which comprises a layer formed by coating on a support a photopolymerizable composition comprising an organic solvent soluble ethylenic unsaturated compound, an organic solvent-dispersible, water insoluble granular dispersion, said dispersion being a latex high molecular weight compound having a polar group and an organic solvent-soluble photopolymerization initiator, said unsaturated compound, said granular dispersion and said initiator being dissolved or dispersed in a solvent composed mainly of an organic solvent.

12. The image-forming material according to claim 11, wherein said image-forming material has a colored masking layer on the support.

13. The image-forming material according to claim 12, wherein said colored masking layer contains a water-softening high molecular weight compound.

14. The image-forming material according to claim 12, wherein said color masking layer contains carbon black as a coloring agent.

4,542,089

LITHOGRAPHIC SUBSTRATE AND ITS PROCESS OF MANUFACTURE

Donald E. Cadwell, St. Paul, and Larry A. Brey, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 411,626, Aug. 26, 1982, Pat. No. 4,457,971, and a continuation-in-part of Ser. No. 299,720, Sep. 8, 1981, abandoned. This application Apr. 9, 1984, Ser. No. 598,171

Int. Cl.⁴ G03C *1/74*

U.S. Cl. 430—276 18 Claims

1. A process for preparing a photosensitive substrate comprising the steps of

A. Providing a hydrophilic ceramic on an aluminum substrate or aluminized surface of a substrate which comprises applying a slurry of at least one monobasic phosphate and inorganic non-metallic particles on at least one surface of the aluminum or aluminized substrate and firing the slurry at a temperature of at least 230° C. for a time sufficiently long to insure substantially complete dehydration of the ceramic layer to form a hydrophilic ceramic coating on said aluminum substrate or aluminized surface of a substrate;

B. Coating on said ceramic layer an organic photosensitive lithographic layer.

4,542,090

ELECTRON BEAM SENSITIVE RESIST

David F. Lewis, Monroe, Conn., assignor to GAF Corporation, Wayne, N.J.

Division of Ser. No. 497,527, May 24, 1983, Pat. No. 4,513,076. This application Apr. 5, 1984, Ser. No. 597,151

Int. Cl.⁴ G03C *5/05*

U.S. Cl. 430—296 6 Claims

1. A method of recording information on a coated substrate comprising the steps of laying down a substrate, coating the substrate with a copolymer of a metal complex wherein the metal is selected from a group consisting of lead, rhodium, calcium or thallium, wherein the lead, calcium or thallium complex is a salt formed by an excess metal ion and carboxy ion and the rhodium complex is a metal ion and an olefin group in a one to one relationship of the mixed half-ester reaction product of an alkyl vinyl ether maleic anhydride copolymer with a terminally unsaturated alcohol and an N-hydroxyalkyl amide, allowing the copolymer to dry on the substrate, and scanning the coated substrate with a beam of electrons.

4,542,091

COLOR IMAGE FORMING PROCESS

Noboru Sasaki; Takatoshi Ishikawa, and Keiichi Adachi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 14, 1984, Ser. No. 681,741

Claims priority, application Japan, Dec. 15, 1983, 58-237068

Int. Cl.⁴ G03C *5/30, 7/16*

U.S. Cl. 430—380 8 Claims

1. A process for forming color images which comprises processing with a developer containing hydroxylamine a silver halide color photographic material comprising a support having thereon at least one red-sensitive silver halide emulsion layer, at least one green-sensitive silver halide emulsion layer, and at least one blue-sensitive silver halide emulsion layer, said blue-sensitive silver halide emulsion layer being disposed at a more upper portion than other color-sensitive silver halide emulsion layers, and said color photographic material further comprising (1) a light-insensitive layer containing at least one of a yellow colored magenta-dye-forming coupler and a yellow non-diffusible organic dye between the lowermost blue-sensitive silver halide emulsion layer and the uppermost layer of the other color-sensitive silver halide emulsion layers, and (2) a light-insensitive silver halide emulsion in any layer above said light-insensitive layer.

4,542,092

COLOR DIFFUSION TRANSFER ELEMENT WITH SPACER LAYER CONTAINING PIGMENT AND SCAVENGER FOR OXIDIZED DEVELOPING AGENT

Ichizo Toya, and Osamu Takahashi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 19, 1984, Ser. No. 662,917

Claims priority, application Japan, Oct. 26, 1983, 58-200589

Int. Cl.⁴ G03C *5/54, 1/40, 1/84*

U.S. Cl. 430—510 17 Claims

1. A photographic element for a diffusion transfer process comprising a support having thereon (1) a layer containing a dye-providing compound capable of releasing or forming a diffusible dye or a precursor thereof as a result of development, (2) a silver halide photographic emulsion layer which is in a complementary color relationship with the dye-providing compound, and (3) a substantially non-sensitive spacing layer between said layers (1) and (2) containing a solid pigment, a hydrophilic colloid, and a nondiffusible compound capable of undergoing a redox reaction with the oxidation product of a silver halide developing agent under an alkaline condition.

4,542,093

PHOTOGRAPHIC SILVERHALIDE MATERIAL CONTAINING TWO SUBBING LAYERS

Tamotsu Suzuki; Sumio Nishikawa, and Sumitaka Tatsuta, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 26, 1984, Ser. No. 634,518

Claims priority, application Japan, Jul. 26, 1983, 58-136338; Jul. 29, 1983, 58-138959

Int. Cl.⁴ G03C *1/78*

U.S. Cl. 430—523 19 Claims

1. A photographic material comprising hydrophobic support having thereon

at least one silver halide emulsion layer,

a first subbing layer composed of a copolymer of a dienic monomer,

and a second subbing layer comprising a hydrophilic layer containng gelatin and water-soluble methyl cellulose having a degree of substitution of 0.5 to 2.6 or gelatin and

water-soluble polyvinyl alcohol having a degree of hydrolysis of 60 to 97 mole % on the first subbing layer,

wherein said copolymer, said methyl cellulose and said polyvinyl alcohol are added in amounts sufficient to prevent blocking of photographic materials.

4,542,094

SILVER HALIDE EMULSION

Kunihiro Koshizuka, Kodaira; Syoji Matsuzaka, Hachioji, and Takaaki Kojima, Odawara, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Oct. 21, 1983, Ser. No. 544,238

Claims priority, application Japan, Oct. 22, 1982, 57-184499; Apr. 18, 1983, 58-69052

Int. Cl.⁴ G03C *1/02*

U.S. Cl. 430—569 **6 Claims**

1. A silver halide photographic paper having on a support at least one layer which contains a silver halide emulsion comprising in combination (a) silver halide made of silver chlorobromoiodide containing 0 to 2 mol % of iodine, (b) a hydroxytetrazaindene compound and (c) a nitrogen-containing heterocyclic compound having at least one mercapto group, the grains of said silver halide having such a size distribution that the variation coefficient is not more than 0.15.

4,542,095

ANTISTATIC COMPOSITIONS COMPRISING POLYMERIZED ALKYLENE OXIDE AND ALKALI METAL SALTS AND ELEMENTS THEREOF

David J. Steklenski, and Jon E. Littman, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 25, 1984, Ser. No. 633,998

Int. Cl.⁴ G03C *1/78*

U.S. Cl. 430—527 **15 Claims**

1. An antistatic composition comprising a binder and a nonionic surface-active polymer having polymerized alkylene oxide monomers and an alkali metal salt characterized in that the composition is heterogeneous, comprises on a dry basis, at least 7 weight percent polymerized alkylene oxide monomers and the binder is selected from the group consisting of a particulate material and a mixture of particulate materials with hydrophilic materials.

4,542,096

DETECTING REARRANGED HUMAN C-MYC DNA FRAGMENTS ASSOCIATED WITH ONCOGENES

Philip Leder, Brookline, Mass., assignor to President and Fellows of Harvard College, Cambridge, Mass.

Filed Feb. 25, 1983, Ser. No. 469,797

Int. Cl.⁴ G01N *33/50, 33/58*

U.S. Cl. 435—6 **3 Claims**

1. The method of detecting rearranged human c-myc DNA fragments associated with oncogenes in a biological sample which comprises

immobilizing DNA from sample cells and from normal control cells on solid supports

subjecting said immobilized DNA to hybridization with a labelled fragment of human c-myc DNA subject to chromosomal rearrangement in malignant cells to determine whether rearrangement is present in said sample cells.

4,542,097

PRODUCTION OF GAMMA-LACTONE, RICH FLAVOR ADDITIVES BY PITYROSPORUM SPECIES CULTURED ON LIPID RICH SUBSTRATES

John N. Labows, Jr., Horsham; Guy Webster, Lafayette Hill, and Kenneth J. McGinley, Philadelphia, all of Pa., assignors to Monell Chemical Senses Center and The Simon Greenberg Foundation, both of Philadelphia, Pa.

Continuation of Ser. No. 205,637, Nov. 10, 1980, Pat. No. 4,396,715, which is a continuation of Ser. No. 026,877, Apr. 4, 1979, abandoned. This application Jul. 25, 1983, Ser. No. 516,751

The portion of the term of this patent subsequent to Aug. 2, 2000, has been disclaimed.

Int. Cl.⁴ C12P *17/04*; C12R *1/645*

U.S. Cl. 435—126 **12 Claims**

1. A method of making gamma-lactone containing flavor-fragrance products comprising the steps of:

(a) providing a substantially sterile culture medium;

(b) combining with said culture medium a lipid rich precursor-stimulant means for stimulating production of gamma-lactone flavor-fragrance products during succeeding incubation; and

(c) incubating said medium combined with said lipid rich precursor-stimulant means with a biologically active inoculant consisting essentially a member of the genus Pityrosporum, said member being *P. orbiculare.*

4,542,098

PRODUCTION OF GLUCOSE DEHYDROGENASE AND USE OF THE RESULTANT ENZYME IN THE ENZYMATIC SYNTHESIS OF L-CARNITINE

Jean-Paul Vandecasteele, Fourqueux; Daniel Ballerini, Saint Germain en Laye; Jeanine Lemal, Rueil-Malmaison, and Yann Le Penru, Chatou, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed May 6, 1983, Ser. No. 492,101

Int. Cl.⁴ C12N *9/04, 1/20*; C12R *1/11*; C12P *13/00*

U.S. Cl. 435—190 **5 Claims**

1. In a process for producing glucose dehydrogenase, comprising cultivating a Bacillus strain in a culture medium and extracting the resultant enzyme, the improvement which comprises employing as said Bacillus strain, *Bacillus megaterium* ATCC 39118.

4,542,099

METHOD FOR MANUFACTURING RESTRICTION ENZYMES FROM BIFIDOBACTERIA

Toshizo Sakurai, and Toshiyuki Kosaka, both of Tokyo, Japan, assignors to Kabushiki Kaisha Yakult Honsha, Tokyo, Japan

Filed Mar. 4, 1981, Ser. No. 240,363

Claims priority, application Japan, Apr. 2, 1980, 55-43857

Int. Cl.⁴ C12N *9/22*; C12R *1/01*

U.S. Cl. 435—199 **2 Claims**

1. A method for manufacturing restriction enzymes, which comprises cultivating a restriction enzyme-producing strain belonging to Bifidobacterium and recovering the restriction enzyme from the bacteria thus cultivated.

4,542,100

STRAIN OF *PSEUDOMONAS PUTIDA* FOR PRODUCING AN INTERMEDIATE COMPOUND IN THE PRODUCTION OF PARA-CRESOL

Scott Hagedorn, Summit, N.J., assignor to Celanese Corporation, New York, N.Y.

Division of Ser. No. 415,129, Sep. 7, 1982,. This application Aug. 15, 1984, Ser. No. 641,173

Int. Cl.⁴ C12N *1/20*; C12P *7/42, 7/22*; C12R *1/40*

U.S. Cl. 435—253 **1 Claim**

1. A biologically pure culture of *Pseudomonas putida* Biotype A strain ATCC 39119.

4,542,101
PROCESS FOR THE CULTIVATION OF MATRIX-BOUND BIOLOGIC CELL SYSTEMS

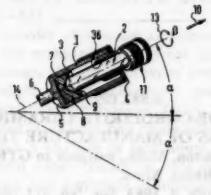
Stephan Nees, Waldwiesenstrasse 30b, 8000 Munchen 70, Fed. Rep. of Germany

Division of Ser. No. 180,035, Aug. 21, 1980, Pat. No. 4,373,029. This application Sep. 29, 1982, Ser. No. 428,023

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1979, 2934328

Int. Cl.⁴ C12N *5/00, 5/02;* **C12M** *3/00*

U.S. Cl. 435—240 **6 Claims**



1. Process for the cultivation of matrix-bound biologic cell systems on microcarrier particles in a nutrient medium which is confined in a culture vessel, comprising the steps of imparting to the culture vessel and its contents a back-and-forth movement about a first axis; simultaneously imparting to the culture vessel a back-and-forth rotary movement about a second axis; and freshening the nutrient medium by oxygenation.

4,542,102
COUPLING OF NUCLEIC ACIDS TO SOLID SUPPORT BY PHOTOCHEMICAL METHODS

Nanibhushan Dattagupta, New Haven, and Donald M. Crothers, Northford, both of Conn., assignors to Molecular Diagnostics, Inc.

Filed Jul. 5, 1983, Ser. No. 511,064

Int. Cl.⁴ G01N *33/50*

U.S. Cl. 435—6 **16 Claims**

1. A solid support capable of binding a nucleic acid thereto upon suitable irradiation, comprising (a) a solid substrate, (b) a member selected from the group consisting of (1) a furocoumarin, (2) a phenanthridinium halide, and (3) photochemically reactive derivatives of (1) and (2), and (c) a divalent radical chemically linking the solid substrate (a) and the member (b).

9. A hybridization probe comprising (a) a solid substrate, (b) a member selected from the group consisting of (1) a furocoumarin, (2) ethidium bromide, and (3) photochemically reactive derivatives of (1) and (2), (c) a divalent radical chemically linking the solid substrate (a) and the member (b), and (d) a nucleic acid photochemically linked to member (b) and fixed thereby to the solid substrate (a).

4,542,103
LATEX AGGLUTINATION DETERMINATION OF IGG IN NEONATALS AND IN COLOSTRUM

Ernest C. Adams, Elkhart, Ind., assignor to Miles Laboratories Inc., Elkhart, Ind.

Continuation-in-part of Ser. No. 519,500, Aug. 2, 1983, abandoned, which is a continuation of Ser. No. 417,661, Sep. 13, 1982, abandoned. This application Nov. 16, 1983, Ser. No. 552,482

Int. Cl.⁴ G01N *33/54*

U.S. Cl. 436—534 **6 Claims**

1. A method for determining the amount of IgG present in a neonatal calf or foal or in the colostrum of a cow or dam, which comprises the steps of contacting a body fluid sample from said neonatal or said colostrum with biologically inert latex particles, measuring the amount of agglutination which occurs and determining therefrom the amount of IgG present in said sample, wherein said latex particles, having a particle size from 0.109 to 0.81 microns are diluted with a buffer to a final concentration of from 0.25 to 2.0 percent, weight/volume basis at a pH of from about 7.5 to 9.0, and wherein said body fluid sample is diluted with a buffer to a range of from 0.01:5 parts to 0.01:2160 parts, v/v basis, at a pH of from about 7.5 to 9.0.

4,542,104
PHYCOBILIPROTEIN FLUORESCENT CONJUGATES

Lubert Stryer, Stanford, and Alexander N. Glazer, Orinda, both of Calif., assignors to The Board of Trustees of the Leland Stanford Jr. Univ., Stanford, Calif.

Filed Apr. 6, 1983, Ser. No. 483,006

Int. Cl.⁴ G01N *33/52, 33/54*

U.S. Cl. 436—536 **13 Claims**

1. A conjugate comprising an energy donor as a first component and a fluorescer as a second component joined together at an energy exchanging distance, wherein one of said first and second components is a phycobiliprotein and the two components have a spectral overlap integral of at least about 10^{-16} cm^3M^{-1}.

11. In a cell staining, fluorescence-activated cell sorting or competitive protein binding diagnostic assay method employing a fluorescent label, where a labeled ligand and/or receptor are brought together and fluorescence is detected in relation to the binding of said ligand and receptor, the improvement comprising employing the conjugate composition according to claim **1** as the fluorescent label.

4,542,105
GLASS COMPOSITION FOR COVERING SEMICONDUCTOR ELEMENT

Kazuyoshi Furukawa, Kawasaki; Masaru Shimbo, Yokohama; Kiyoshi Fukuda, Yokohama, and Katsujirou Tanzawa, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 29, 1982, Ser. No. 454,248

Claims priority, application Japan, Jan. 21, 1982, 57-7930

Int. Cl.⁴ C03C *3/08, 3/10*

U.S. Cl. 501—22 **4 Claims**

1. A glass composition for covering a semiconductor element consisting essentially of 3 to 8% by weight of Al_2O_3, 35 to 45% by weight of SiO_2, 10 to 30% by weight of ZnO, 5 to 20% by weight of PbO, 3 to 10% by weight of B_2O_3, 12–20% by weight of alkaline earth metal oxides selected from the group consisting of MgO, CaO, SrO, and BaO, maximum contents of MgO, CaO, SrO being, respectively, 7% by weight, 3% by weight, 7% by weight, and BaO 7–15% by weight, and optionally not more than 2% by weight of an oxide selected from the group consisting of Bi_2O_3, CeO_2, In_2O_3, MnO_2, P_2O_5, Sb_2O_3, Ta_2O_5, V_2O_5 and Y_2O_3, the thermal expansion coeffieient of the glass composition being less than 50×10^{-7} °C.$^{-1}$.

4,542,106
FIBER GLASS COMPOSITION

James F. Sproull, Sarver, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 562,945, Dec. 19, 1983, abandoned. This application Jun. 18, 1984, Ser. No. 621,830

Int. Cl.⁴ C03C *13/00, 3/04*

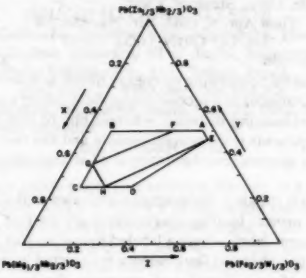
U.S. Cl. 501—38 **3 Claims**

1. A glass fiber having a composition consisting essentially of 58 to 60 percent SiO_2, 11 to 13 percent Al_2O_3, 21 to 23 percent CaO, 2 to 4 percent MgO, 1 to 1.8 percent TiO_2, and alkali metal oxide selected from the group consisting of Na_2O and K_2O up to about 1 percent, all percentages by weight of the glass fiber composition and characterized by having a seed count of 5 seeds per cubic centimeter or less and an electrical current leakage value when measured by the electrical leakage test described herein of 2.8 nanoamperes or less.

4,542,107
DIELECTRIC CERAMIC COMPOSITIONS

Junichi Kato, Osaka; Yoichirou Yokotani, Ibaragi; Masamitsu Nishida, Osaka, and Hiromu Ouchi, Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 30, 1984, Ser. No. 615,241
Claims priority, application Japan, May 30, 1983, 58-91312
Int. Cl.[4] C04B *35/00*
U.S. Cl. 501—134 2 Claims

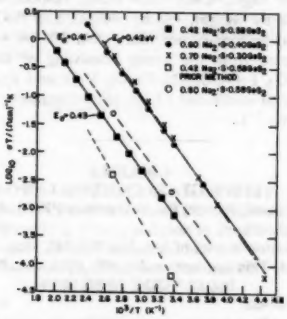


1. A ceramic composition consisting essentially of $Pb(Mg_{1/3}Nb_{2/3})_x(Zn_{1/3}Nb_{2/3})_y(Fe_{2/3}W_{1/3})_zO_3$ wherein $x+y+z=1$ and the proportions of x,y and z fall within the ranges represented by the polygon ABCDE in the accompanying drawing, and further containing MnO_2 in amount of 0.05 to 1.0 wt%.

4,542,108
GLASS CAPABLE OF IONIC CONDUCTION AND METHOD OF PREPARATION

Sherman Susman, Park Forest, Ill.; Leah Boehm, Jerusalem, Israel; Kenneth J. Volin, Fort Collins, Colo., and Charles J. Delbacq, Downers Grove, Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 375,525, May 6, 1982, Pat. No. 4,432,891.
This application Jul. 21, 1983, Ser. No. 515,835
Int. Cl.[4] C03C *3/12, 3/30;* H01B *1/10*
U.S. Cl. 501—40 13 Claims



1. A method of preparing an electrically conductive glass comprising: preparing a molten mixture of an alkali metal sulfide and a non-metal sulfide compound in a substantially oxygen free atmosphere, wherein the non-metal sulfide compound is present in an amount of between about 0.3 and about 0.7 mole fraction and the alkali metal sulfide is present in an amount of between about 0.3 about and 0.7 mole fraction, the non-metal sulfide is selected from the class consisting of sulfides of boron, silicon, germanium and other elements in groups III A, IV A, and V A of the periodic table capable of serving as glass networks, pouring the molten mixture protected by the substantially oxygen free atmosphere into a mold of sufficient mass and cooling capacity to supercool the mixture to the glass transition temperature prior to crystallization to form an amorphous solid mixture of alkali metal sulfide and nonmetal sulfide capable of conducting the ion of said alkali metal.

4,542,109
SILICON NITRIDE-CORDIERITE CERAMIC ARTICLE, AND PROCESS OF MANUFACTURE THEREOF

Arvid E. Pasto, Littleton, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

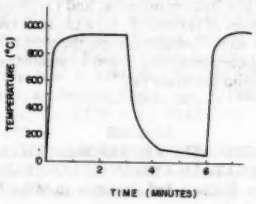
Filed Aug. 9, 1983, Ser. No. 521,793
Int. Cl.[4] C04B *35/58*
U.S. Cl. 501—97 19 Claims

1. A ceramic article consisting essentially of a first phase of silicon nitride, a second continuous phase of cordierite, and a nucleating agent, said ceramic article having a density greater than 95 percent of theoretical density, said second continuous phase of cordierite being essentially crystalline.

4,542,110
PROCESS FOR PRODUCING ZIRCONIUM OXIDE SINTERED BODY

Takao Nakada, Hitachi; Mamoru Kamimura, Katsuta, and Toranosuke Ashizawa, Hitachi, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 498,065, May 25, 1983, abandoned.
This application Dec. 19, 1984, Ser. No. 683,679
Claims priority, application Japan, Jun. 8, 1982, 57-98293
Int. Cl.[4] C04B *35/48*
U.S. Cl. 501—103 6 Claims



1. A process for producing a zirconium oxide sintered body, which comprises wet blending 87.5 to 91.0% by weight of zirconium oxide powder to grind mixture of oxide powders, and 8.5 to 12.3% by weight of yttrium oxide powder, drying the resulting mixture, and subjecting the dried mixture to heat treatment at a temperature higher than 1,300° C. and below sintering temperature, wherein the average particle size of the mixture of the oxide powders after grinding is 1 um or less; mixing the heat-treated mixture with 0.5% by weight or less of silicon oxide and 0.2 to 1.0% by weight of aluminum oxide, and then sintering the mixture to obtain 95% by weight or more of a cubic phase in a crystal phase at ordinary temperatures.

4,542,111

SPRAY POWDER FOR THE MANUFACTURE OF WEAR RESISTANT AND TEMPERATURE RESISTANT COATINGS

Ulrich Buran, Burscheid; Manfred Fischer, Leichlingen, and Hans J. Neuehäuser, Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to Goetze AG, Burscheid, Fed. Rep. of Germany

Filed Nov. 28, 1983, Ser. No. 555,515

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1982, 3244073

Int. Cl.[4] C04B *35/10, 35/46, 35/50*

U.S. Cl. 501—127 10 Claims

1. Spray powder containing aluminum oxide and titanium dioxide for the manufacture of wear resistant and break-out resistant coatings, the spray powder consisting essentially of: 50 to 90 weight percent aluminum oxide (Al_2O_3), 5 to 40 weight percent titanium dioxide (TiO_2), and from 10 up to 30 weight percent of at least one oxide selected from lanthanum oxide (La_2O_3), a mixture of lanthanum oxide with up to 30 weight percent other oxides of rare earth metals, niobium oxide (Nb_2O_5), and a mixture of niobium oxide with up to 30 weight percent calcium carbonate ($CaCO_3$).

4,542,112

METHOD FOR PRODUCING SPINEL FINE POWDERS

Minoru Matsui, and Tomonori Takahashi, both of Nagoya, Japan, assignors to NGK Insulators, Ltd., Japan

Filed Jan. 25, 1983, Ser. No. 460,912

Claims priority, application Japan, Oct. 21, 1982, 57-184817

Int. Cl.[4] C04B *35/04;* C01F *7/16*

U.S. Cl. 501—120 14 Claims

1. A method for producing spinel fine powders comprising the steps of:

(a) dissolving 1 mole of magnesium alkoxide of the formula

$$Mg(OR)_2$$

wherein R is an alkyl group having 1–3 carbon atoms, and, from 2:1 to 3 moles of aluminum alkoxide of the formula

$$Al(OR')_3$$

wherein R' is an alkyl group having 1–3 carbon atoms, in an alcohol of the formula

$$R''OH$$

wherein R'' is an alkyl group having 1–3 carbon atoms to form a solution;

(b) hydrolyzing said solution; and

(c) heating precipitates formed by said hydrolysis at temperatures from 700° C. to 1200° C. to form fine powders consisting of single-phase spinel-structured solid solutions of oxides of aluminum and magnesium of the formula

$$MgOxAl_2O_3$$

wherein x is from 1.05 to 1.5.

4,542,113

METHOD FOR PREPARING SPHEROIDAL ALUMINA

Arnold Meyer, St. Michaelisdonn, and Klaus Noweck, Brunsbüttel, both of Fed. Rep. of Germany, assignors to Condea Chemie GmbH, Brunsbüttel, Fed. Rep. of Germany

Filed Mar. 25, 1983, Ser. No. 478,851

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1982, 3212249

Int. Cl.[4] B01J *35/08, 37/00*

U.S. Cl. 502—8 7 Claims

1. In a method for preparing high density, high crush strength spheroidal alumina from alumina hydrates by the oil drop method wherein an alumina sol or dispersion is prepared by reacting alumina hydrates with a dilute aqueous acid and the alumina sol or dispersion introduced as droplets into the upper end of a forming column filled in its upper portion with a liquid hydrocarbon and in its lower portion with an aqueous solution of ammonia, the improvement comprising

(a) preparing an alumina sol or dispersion having a solids content greater than 20 and up to 40 percent by weight alumina from alumina hydrates consisting of 10 to 40 weight percent boehmite and 90 to 60 weight percent pseudo-boehmite prepared by hydrolysis of aluminum alkoxides and characterized by a boehmite primary crystallite size of 60 to 65 Angstroms and a pseudo-boehmite primary crystallite size of 35 to 40 Angstroms as measured by X-ray diffraction 020 reflex,

(b) incorporating 1 to 10 percent by weight urea in the alumina sol or dispersion prepared in step (a),

(c) dispersing the resultant urea-alumina sol composition in droplet form into the forming column which is kept at room temperature, and

(d) drying and activating the thus formed spheroidal particles.

4,542,114

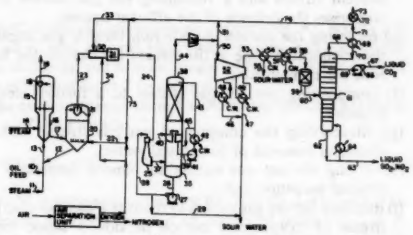
PROCESS FOR THE RECOVERY AND RECYCLE OF EFFLUENT GAS FROM THE REGENERATION OF PARTICULATE MATTER WITH OXYGEN AND CARBON DIOXIDE

William P. Hegarty, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 404,676, Aug. 3, 1982, abandoned. This application Apr. 13, 1984, Ser. No. 599,856

Int. Cl.[4] B01J *21/20;* C10G *11/18;* C01B *31/20, 3/12*

U.S. Cl. 502—39 9 Claims



1. A process wherein the effluent flue gas from the removal of hydrocarbonaceous coke from particulate matter by combustion in a combustion zone with a mixture of commercially pure oxygen diluted to a concentration of 24–30 mole percent with carbon dioxide is treated to provide a carbon dioxide-rich recycle gas stream, comprising the steps of:

(a) introducing the effluent flue gas into a carbon monoxide combustion stage wherein essentially all of the carbon monoxide content of the gas is converted to carbon dioxide by combustion with oxygen gas;

(b) reducing the temperature of the resulting combusted effluent gas of step (a) by indirect heat exchange in a waste heat boiler and recovering the waste heat from said gas;

(c) direct cooling and quenching the effluent gas by the introduction of a water stream into the gas with the attendant condensation of water of combustion and the entrainment of particulates into the water stream with subsequent removal of the stream from the gas and without significant adsorption of sulfur dioxide from the gas;

(d) compressing the effluent gas to approximately the inlet pressure of the combustion zone;

(e) separating the effluent gas into a carbon dioxide-rich recycle gas stream which constitutes 61–80 percent of the effluent stream and a remaining net gas stream which comprises the balance of the effluent stream;

(f) recycling the carbon dioxide-rich recycle gas stream to the combustion zone as the diluent for oxygen fed to the zone for combustion;
(g) compressing the net gas stream to a further elevated pressure;
(h) aftercooling the compressed net gas stream with the attendant removal of condensed water;
(i) drying the net gas stream to remove essentially any residual moisture, and
(j) distilling the net gas stream to recover a gaseous overhead stream of oxygen and carbon dioxide, a liquid carbon dioxide stream formed by the condensed reflux of the distillation and a liquid bottom stream containing oxides of sulfur and nitrogen.

4. A process wherein the effluent flue gas from the removal of hydrocarbonaceous coke from particulate matter by complete combustion in a combustion zone, wherein essentially no residual carbon monoxide exists, with a mixture of oxygen diluted to a concentration of 24–30 mole percent with carbon dioxide is treated to provide a carbon dioxide-rich recycle gas stream comprising the steps of:
(a) reducing the temperature of the resulting combusted effluent gas by indirect heat exchange in a waste heat boiler and recovering the waste heat from said gas;
(b) direct cooling and quenching the effluent gas by the introduction of a water stream into the gas with the attendant condensation of water of combustion and the entrainment of particulates into the water stream with subsequent removal of the stream from the gas and without significant absorption of sulfur dioxide from the gas;
(c) compressing the effluent gas to approximately the inlet pressure of the combustion zone;
(d) separating the effluent gas into a carbon dioxide-rich recycle gas stream which constitutes 61–80 percent of the effluent stream and a remaining net gas stream which comprises the balance of the effluent stream;
(e) recycling the carbon dioxide-rich recycle gas stream to the combustion zone as the diluent for oxygen fed to the zone for combustion;
(f) compressing the net gas stream to a further elevated pressure;
(g) aftercooling the compressed net gas stream with the attendant removal of condensed water;
(h) drying the net gas stream to remove essentially any residual moisture, and
(i) distilling the net gas stream to recover a gaseous overhead stream of oxygen and carbon dioxide, a liquid carbon dioxide stream produced from the condensed reflux of the distillation and a liquid bottom stream containing oxides of sulfur and nitrogen.

6. A process wherein the effluent flue gas from the removal of hydrocarbonaceous coke from particulate matter by combustion in a combustion zone with a mixture of oxygen diluted to a concentration of 24–30 mole percent with carbon dioxide is treated to provide a carbon dioxide-rich recycle gas stream and a carbon-monoxide-rich stream for further processing, comprising the steps of:
(a) reducing the temperature of the effluent flue gas from the combustion zone to 150°–425° C. and recovering waste heat;
(b) passing the effluent flue gas over a deoxygenation and reducing catalyst to eliminate oxygen and reduce SO_X to H_2S and NO_X to N_2;
(c) further reducing the temperature of the effluent flue gas recovering waste heat;
(d) quenching the effluent flue gas by the introduction of a water stream into the gas with the attendant condensation of water of combustion and the entrainment of particulates into the water stream with subsequent removal of the stream from the gas and without significant absorption of sulfur from the gas;
(e) compressing the effluent flue gas to a pressure in the range of 10 to 20 atm. and drying the pressurized stream;
(f) separating a carbon dioxide-rich recycle stream and a net combustion product gas in a low temperature phase separation of the effluent flue gas;
(g) recycling the carbon dioxide-rich recycle stream to the combustion zone as the diluent for oxygen fed to the zone for combustion;
(h) compressing the net combustion product gas to an elevated pressure;
(i) converting at least a part of the carbon monoxide content of the net combustion product stream by the shift reaction to reduce the carbon monoxide content of the stream and produce hydrogen and additional carbon dioxide, and
(j) separating the stream into a carbon dioxide stream, a hydrogen stream and a hydrogen sulfide stream by a solvent sorption system.

4,542,115
ZEOLITE GRANULATE, PROCESS FOR ITS PRODUCTION

Hans Strack; Peter Kleinschmit, both of Hanau, and Ehrfried Parr, Rodenbach, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Aug. 9, 1982, Ser. No. 406,526

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1981, 3132379

Int. Cl.⁴ B01J *29/06*; **C10B** *33/28*

U.S. Cl. 502—64 **15 Claims**

1. Zeolite granulates of zeolite Type NaA having the following parameters:

Adsorption Data: (p/po = 0.8, 20° C.)	
H_2O	>22.0%
NH_3	>11.0%
CO_2	≦0.1%
O_2	≦0.1%
N_2	≦0.1%
Ar	≦0.1%
CH_3OH	≦0.2%
$CH_3—CH_2—OH$	≦0.2%.

2. A process for the production of the zeolite granulates of claim 1 comprising having zeolite A powder present in a mixer, adding aqueous alkali silicate solution, mixing until there are obtained zeolite granulates having a particle size of at least 0.1 mm, first drying the moist zeolite granulates with air at a temperature of 20° to 39° C., during which the carbon dioxide content of the drying air is regulated to less than 200 ppm, subsequently drying in a second drying step at a temperature of 40°–120° C. and subsequently activating the thus obtained granulates at a temperature of at most 600° C.

3. A process according to claim 2 including the step of post-rolling the granulates before the first drying step.

4,542,116
CATALYST FOR REMOVING SULFUR OXIDES FROM A GAS

Ralph J. Bertolacini, Naperville; Eugene H. Hirschberg, Park Forest, and Frank S. Modica, Downers Grove, all of Ill., assignors to The Standard Oil Company, Chicago, Ill.

Division of Ser. No. 363,269, Mar. 29, 1982, Pat. No. 4,405,443. This application May 3, 1983, Ser. No. 491,121

Int. Cl.⁴ B01J *29/06*

U.S. Cl. 502—65 **15 Claims**

1. A composition of matter prepared by the steps comprising:
(a) impregnating a particulate solid cracking catalyst comprising from about 0.5 to about 50 weight percent of a crystalline aluminosilicate zeolite distributed throughout a matrix consisting essentially of from about 40 to about 100 weight percent of alumina and from about 0 to about 60 weight percent of silica with an oxide of yttrium wherein the amount of said oxide of yttrium is sufficient to add

from about 0.004 to about 10 weight percent of yttrium, calculated as the oxide of yttrium, to said catalyst particles; and

(b) calcining said impregnated catalyst particles at a temperature between about 200° and about 820° C.

8. A composition of matter prepared by the steps comprising:

(a) impregnating a particulate solid comprising an inorganic oxide of aluminum with an oxide of yttrium, wherein the particulate solid contains at least about 40 weight percent of said inorganic aluminum oxide and the ratio by weight of inorganic aluminum oxide to oxide of yttrium is from about 1.0 to about 1000;

(b) calcining the impregnated particulate solid with a particulate solid cracking catalyst for hydrocarbons comprising a crystalline aluminosilicate zeolite distributed through a matrix during the manufacture of the cracking catalyst.

4,542,117
CATALYST COMPOSITION, METHOD FOR ITS PRODUCTION

George E. Morris, Egham; Barry Nay, Woking, and David G. Stewart, Epsom, all of England, assignors to The British Petroleum Company p.l.c., London, England

Filed Jul. 11, 1983, Ser. No. 512,740

Claims priority, application United Kingdom, Jul. 14, 1982, 8220421

Int. Cl.⁴ B01J *29/06, 21/08*

U.S. Cl. 502—66 **9 Claims**

1. A catalyst composition suitable for use in a process for the production of hydrocarbons from synthesis gas which composition comprises the essential metals:

(a) ruthenium and at least one of iron, cobalt, and nickel, and

(b) at least one of lithium, sodium, potassium, calcium and magnesium

supported on silicalite, the metals [(a)+(b)] being present on the silicalite support in an amount in the range from 0.5 to 15% by weight.

4. A catalyst composition suitable for use in a process for the production of hydrocarbons from synthesis gas which composition comprises the essential metals:

(a) ruthenium and at least one of iron, cobalt, and nickel, and

(b) at least one of lithium, sodium, potassium, calcium and magnesium

supported on silicalite, the metals [(a)+(b)] being present on the silicalite support in an amount in the range from 0.5 to 15% by weight, modified by combination with the hydrogen form of a crystalline zeolite having the composition expressed as mole ratios of oxides:

$$0.9\pm0.2M_{2/n}O:W_2O_3:20 \text{ to } 50\ YO_2:zH_2O$$

wherein M is at least one cation, n is the valence thereof, W is aluminium and/or gallium, Y is silicon and/or germanium and z has a value of 0 to 40, said zeolite being characterised by an XRD pattern which is substantially that of an MFI-type zeolite.

4,542,118
CATALYST MANUFACTURE

Richard J. Nozemack, Reisterstown; John A. Rudesill, Baltimore; Dean A. Denton, Baltimore, and Raymond D. Feldwick, Timonium, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Feb. 2, 1984, Ser. No. 576,496

Int. Cl.⁴ B01J *29/08, 21/12, 21/16*

U.S. Cl. 502—65 **17 Claims**

1. A method for preparing particulate inorganic oxide composites which comprises:

(a) preparing a mixture containing (1) a solid finely divided inorganic oxide selected from the group comprising of zeolites, clay, alumina, silica, silica-alumina and mixtures thereof, (2) aqueous aluminum chlorhydrol, and (3) water;

(b) forming and drying said mixture to obtain particulate aluminum chlorhydrol containing composites;

(c) reacting said composites with ammonia essentially in the absence of free liquid water to convert the aluminum chlorhydrol into a cohesive binder; and

(d) washing the reacted composites to remove soluble salts.

12. A catalyst composition prepared by the method of claim 1.

14. The composition of claim 12 wherein said catalyst contains from about 1 to 60 parts by weight zeolite, 5 to 25 parts by weight alumina binder, and up to about 90 parts by weight of a particulate component selected from the group consisting of alumina, silica, silica-alumina, clay and mixtures thereof.

4,542,119
HYDROFORMYLATION CATALYST AND PROCESS

Chao-Yang Hsu, Media, and Paul E. Ellis, Jr., Downingtown, both of Pa., assignors to Sun Tech, Inc., Philadelphia, Pa.

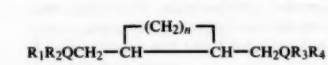
Filed Apr. 11, 1984, Ser. No. 598,935

Int. Cl.⁴ B01J *27/08, 27/10, 31/24*

U.S. Cl. 502—153 **10 Claims**

1. A catalyst system for hydroformylation of olefins, which comprises (1) a platinum (II) (acetylacetonate)$_2$; (2) a Group IVB metal halide; and (3) a bidentate tertiary ligand of the formula:

$$R_1R_2Q(CH_2)_mQR_3R_4; \text{ or}$$



wherein Q is arsenic, antimony, or phosphorus; R_1, R_2, R_3 and R_4 are alkyl, aryl, alkoxyl, or aryloxyl groups, and may be the same or different; and m is an integer of from 3 to about 5; and n is an integer of from 2 to about 4.

2. The composition of claim 1 wherein the Group IVB metal halide is of the formula:

$$MR_nX_{(4-n)};\ MX_2;\text{ or } MX_4$$

wherein M is germanium, lead, or tin; R is alkyl, aryl, alkoxyl, or aryloxyl, in which case n is an integer of from 1 to 3, or R is an anion derived from a diketone, diacid, or diester, in which case n is an integer of from 1 to 3 if the anion is a mono-anion, or n is 1 if the anion is a di-anion; and X is a halide.

4,542,120
HYDROFORMYLATION CATALYST AND PROCESS

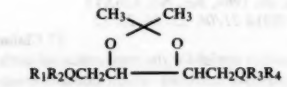
Chao-Yang Hsu, Media, and Paul E. Ellis, Jr., Downingtown, both of Pa., assignors to Sun Tech, Inc., Philadelphia, Pa.

Filed Apr. 11, 1984, Ser. No. 598,934

Int. Cl.⁴ B01J *27/08, 27/10, 31/24*

U.S. Cl. 502—153 **9 Claims**

1. A catalyst system for hydroformylation of olefins, which comprises (1) a platinum (II) (acetylacetonate)$_2$; (2) a Group IVB metal halide; and (3) a bidentate tertiary ligand of the formula:



wherein Q is arsenic, antimony, or phosphorus; and R_1, R_2, R_3 and R_4 are alkyl, aryl, alkoxyl, or aryloxyl groups, and may be the same or different.

2. The composition of claim 1 wherein the Group IVB metal halide is of the formula:

$$MR_nX_{(4-n)};\ MX_2;\ \text{or}\ MX_4$$

wherein M is germanium, lead, or tin; R is alkyl, aryl, alkoxyl, or aryloxyl, in which case n is an integer of from 1 to 3, or R is an anion derived from a diketone, diacid, or diester, in which case n is an integer of from 1 to 3 if the anion is a mono-anion, or n is 1 if the anion is a di-anion; and X is a halide.

4,542,121

CATALYSTS FROM MOLYBDENUM POLYSULFIDE PRECURSORS, THEIR PREPARATION AND USE

Howard L. Mitchell, III, Metairie, and Willard H. Sawyer, Baton Rouge, both of La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 399,947, Jul. 20, 1982, Pat. No. 4,430,442. This application Jan. 13, 1984, Ser. No. 570,364

The portion of the term of this patent subsequent to Feb. 7, 2001, has been disclaimed.

Int. Cl.⁴ B01J *27/02, 31/02, 27/24;* **C01G** *37/00*

U.S. Cl. 502—220 **11 Claims**

1. In a process for the preparation of a hydrotreating catalyst from

a catalyst precursor salt characterized by the formula

$$B_x[Mo_3S_z]$$

where

B is an ammonium ion, polyammonium ion, or quaternary phosphonium ion, or a hydrocarbyl substituted ammonium ion, hydrocarbyl substituted polyammonium ion, or hydrocarbyl substituted tertiary or quaternary phosphonium ion,

x is 1 where B is a divalent cationic moiety, or 2 where B is a monovalent cationic moiety, $[Mo_3S_z]$ is a divalent anionic moiety wherein

z is an integer greater than 15,

by contacting together and decomposing said hydrogen precursor salt in the presence of hydrogen, hydrocarbon and sulfur to form said hydrotreating catalyst,

the improvement comprising

dispersing said hydrotreating catalyst precursor salt, prior to decomposition in the presence of hydrogen, hydrocarbon and sulfur, in an ammonium sulfide or dilute ammonium polysulfide solution and heating sufficient to remove sulfur from said catalyst precursor salt and lower the value of z of the formula $B_x[Mo_3S_z]$ to 15 or less.

4,542,122

COBALT CATALYSTS FOR THE PREPARATION OF HYDROCARBONS FROM SYNTHESIS GAS AND FROM METHANOL

Virgil L. Payne, and Charles H. Mauldin, both of Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jun. 29, 1984, Ser. No. 626,013

Int. Cl.⁴ B01J *21/06, 23/74, 23/12*

U.S. Cl. 502—325 **17 Claims**

1. A catalyst composition useful for the conversion of methanol or synthesis gas to hydrocarbons which consists essentially of cobalt, or cobalt and thoria in catalytically active amount composited with titania or a titania-containing support, wherein the titania support is one having a rutile:anatase ratio of at least about 2:3.

4,542,123

COMPOSITION AND METHOD FOR INCREASING BRAIN TYROSINE LEVELS

Richard J. Wurtman, Boston, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jan. 11, 1982, Ser. No. 338,682

Int. Cl.⁴ A61K *37/26, 31/70*

U.S. Cl. 514—3 **12 Claims**

4. The method of increasing brain tryosine levels in an animal, which comprises administering to the animal a composition consisting essentially of an amount of tyrosine effective to increase brain tyrosine levels and a carbohydrate in an amount effective to cause insulin to be released in the animal.

4,542,124

OCTAPEPTIDE VASOPRESSIN ANTAGONISTS

William F. Huffman, Malvern, and Michael L. Moore, Media, both of Pa., assignors to Smithkline Beckman Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 467,117, Feb. 16, 1983, Pat. No. 4,469,679. This application Jun. 26, 1984, Ser. No. 624,542

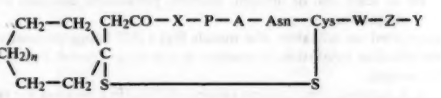
Claims priority, application European Pat. Off., Feb. 3, 1984, 84300692.5

The portion of the term of this patent subsequent to Sep. 4, 2001, has been disclaimed.

Int. Cl.⁴ A61K *37/00;* **C07C** *103/52*

U.S. Cl. 514—11 **12 Claims**

1. A polypeptide compound of the formula:



in which:

P is Phe or Phe(4'-Alk);

X is D-Phe, D-Val, D-Leu, D-Ile, D-Nva, D-Pba, D-Nle, D-Cha, D-Abu, D-Met, D-Chg, D-Tyr, L-Tyr, D-alle, D-Tyr(alk) or L-Tyr(alk);

Y is NH_2, NHAlk, NHBzl or OH;

A is Ile, Abu, Ala, Gly, Lys, Cha, Nle, Phe, Leu, Chg, Nva or, when n is 0 or 2 or W is D-Pro, Val;

W is L-Pro, ΔPr or, when A is Val or is as defined above, D-Pro;

Z is D-Arg, L-Arg, D-Lys or L-Lys; and

n is 1 or, when A is Val or is as defined above, 0 or 2; or a pharmaceutically acceptable salt or prodrug derivative thereof.

4,542,125

ANTIMICROBIAL SURFACE DEGERMING COMPOSITIONS AND METHOD OF USE THEREOF

William G. Gorman, East Greenbush; Karl F. Popp, Schodack; Jennifer C. Galloway, Kinderhook, and David M. Sedlock, Bethlehem, all of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

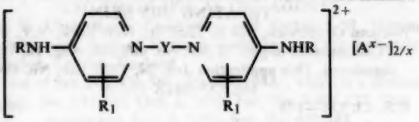
Filed Mar. 23, 1984, Ser. No. 592,963

Int. Cl.⁴ A01N *31/00;* **A61K** *31/70*

U.S. Cl. 514—57 **12 Claims**

1. An antimicrobial surface degerming composition consisting essentially of from about 0.01% to about 10% by weight of a bis[4-(R-amino)-1-pyridinium]alkane salt having the structural formula

Formula I



wherein

Y is alkylene having from 4 to 18 carbon atoms and separating the two 4-(R-amino)-1-pyridinium groups by from 4 to 18 carbon atoms;

R is the same in both occurrences and is alkyl having from 6 to 18 carbon atoms, cycloalkyl having from 5 to 7 carbon atoms, benzyl or phenyl substituted by methylenedioxy or one or two substituents selected from the group consisting of halo, lower-alkyl, lower-alkoxy, nitro, cyano and trifluoromethyl;

R_1 is the same in both occurrences and is hydrogen or lower-alkyl;

A^{x-} is a pharmaceutically acceptable anion; and x is the valence of the anion;

(B) from about 0.1% to about 50% by weight of one or more compounds selected from the group consisting of

(a) a higher-alkylaminoalkanoic acid having the structural formula

$$RR'N-(CH_2)_n-COOH \qquad \text{Formula III}$$

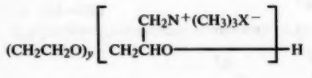
wherein R is alkyl or alkenyl having from 8 to 18 carbon atoms, R' is hydrogen or $(CH_2)_n$—COOH and n is an integer from 1 to 5 or an alkali metal salt thereof;

(b) a quaternary nitrogen-containing cellulose ether having the structural formula

$$[R_{cell}(OR)_3]_x \qquad \text{Formula V}$$

wherein R_{cell} is the residue of an anhydroglucose unit ($C_6H_{10}O_5$), x represents the degree of polymerization and is an integer from about 50 to about 20,000 and preferably from about 200 to about 5,000, the R's are the same or different and R has the structural formula

Formula VI



wherein y is an integer from 0 to 10, z is an integer from 0 to 3 and X^- is a pharmaceutically acceptable anion; and

(C) an aqueous vehicle.

4,542,126

PESTICIDALLY ACTIVE PYRIMIDIN-5-YL-(THIO)PHOSPHORIC ACID ESTER-AMIDES

Fritz Maurer, Wuppertal; Bernhard Homeyer, Leverkusen; Benedikt Becker, Mettmann, and Gerd Hänssler, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

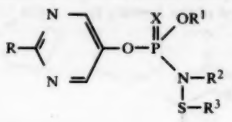
Filed Mar. 1, 1984, Ser. No. 585,322

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1983, 3309124

Int. Cl.⁴ A01N *57/32;* **C07F** *9/65*

U.S. Cl. 514—86 **12 Claims**

1. A pyrimidin-5-yl-(thio)phosphoric acid esteramide of the formula



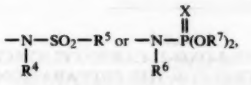
in which

X is oxygen or sulphur,

R is hydrogen, alkyl with 1 to 6 carbon atoms, aryl with 6 to 10 carbon atoms, or cycloalkyl with 3 to 6 carbon atoms,

R^1, R^2, R^4, R^6 and R^7 each independently is alkyl with 1 to 6 carbon atoms,

R^3 is alkyl, halogenoalkyl, cyanoalkyl, mono- or di-alkylamino with in each case 1 to 6 carbon atoms per alkyl part, an aryl radical which has 6 to 10 carbon atoms and is optionally substituted by at least one substituent independently selected from halogen, cyano, nitro, halogenoalkyl and halogenoalkoxy with 1 to 6 carbon atoms, and alkyl with 1 to 4 carbon atoms, or



and

R^5 is alkyl with 1 to 6 carbon atoms, or an aryl which has 6 to 10 carbon atoms and optionally substituted by at least one substituent independently selected from halogen, cyano, nitro, halogenoalkyl and halogenoalkoxy with 1 to 6 carbon atoms and 1 to 5 halogen atoms, and alkyl with 1 to 4 carbon atoms.

10. An arthropodicidal, nematocidal and fungicidal composition comprising an arthropodicidal, nematocidal and fungicidally effective amount of a compound according to claim 1 in admixture with a diluent.

11. A method of combatting arthropods, nematodes and fungi which comprises administering to such arthropods, nematodes or fungi or to a habitat thereof an arthropodicidally, nematocidally or fungicidally effective amount of a compound according to claim 1.

4,542,127

ANTIDIABETIC SALICYLIC ACID DERIVATIVES

Volker Hitzel, Hofheim am Taunus; Rudi Weyer, Kelkheim; Karl Geisen, Frankfurt am Main, and Harald Ritzel, Mainz, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

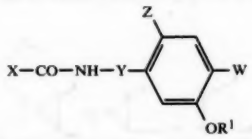
Filed Mar. 29, 1983, Ser. No. 479,906

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1982, 3211934

Int. Cl.⁴ A61K *31/625;* **C07D** *401/04*

U.S. Cl. 514—161 **4 Claims**

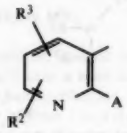
1. A salicylic acid derivative of the formula I



(I)

in which W denotes a carboxyl group or an alkoxycarbonyl group having up to 4 carbon atoms in the alkoxy moiety, Z denotes a hydrogen atom or a halogen atom, R^1 denotes a hydrogen atom, a (C_1–C_6)-alkyl group, a (C_2–C_6)-alkenyl group or an alkoxyalkyl group having a total of up to 6 carbon

atoms, Y denotes an alkylene radical having 1-3 C atoms, X denotes a pyridine radical of the formula II



(II)

wherein R^2 denotes a hydrogen atom or a halogen atom or an alkyl group having up to 4 C atoms or an alkoxy group having up to 4 C atoms in the alkoxy moiety, R^3 denotes a hydrogen atom or an alkyl group having up to 4 C atoms, A denotes a (C_4 to C_8)-alkyleneimino group, which is unsubstituted or substituted by one or two (C_1-C_4)-alkyl groups, this group being bonded to the rest of the molecule via the nitrogen atom, or a physiologically tolerated salt with an acid or a base.

4. A process for treating patients suffering from diabetes mellitus which process comprises administering to a patient an effective quantity of a compound of claim **1**.

4,542,128

17α-PREGN-4-ENE-3-OXO-21-CARBOXYLIC ACID ESTERS, PROCESS FOR THE PREPARATION THEREOF, AND USE THEREOF AS MEDICINAL AGENTS

Dieter Bittler; Henry Laurent; Klaus Nickisch; Rudolf Weichert, all of Berlin, and Jorge Casals-Stenzel, Mainz, all of Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin & Bergkamen, Fed. Rep. of Germany

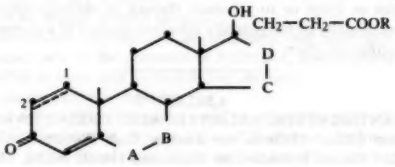
Filed Jul. 22, 1983, Ser. No. 516,398

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1982, 3227597

Int. Cl.⁴ A61K *31/33*

U.S. Cl. 514—177 **21 Claims**

1. A 17α-pregn-4-ene-3-oxo-21-carboxylic acid ester of the formula



wherein

C_1 C_2 is a CC single or C=C double bond;

—A—B— is

COOCH₃;

—C—D— is

and

R is C_{1-6}-alkyl or C_{2-6}-alkenyl.

6. A pharmaceutical composition containing an amount of a compound of claim **1** effective as an antialdosterone agent and a pharmacologically acceptable carrier.

4,542,129

DHEA FORMULATIONS AND METHODS FOR TREATING DRY SKIN

Norman Orentreich, 140 E. 72nd St., New York, N.Y. 10021

Continuation-in-part of Ser. No. 408,548, Aug. 16, 1982, abandoned. This application Jan. 24, 1985, Ser. No. 694,537

Int. Cl.⁴ A61K *31/56*

U.S. Cl. 514—178 **16 Claims**

1. A topical composition for treating dry skin in a patient comprising:

a. dehydroepiandrosterone and/or a pharmaceutically acceptable, therapeutically effective derivative thereof in an amount effective to increase sebum production;

b. a keratolytic agent in an amount sufficient to counteract the formation of acne-like skin lesions without diminishing the effectiveness of dehydroepiandrosterone or its derivative; and

c. a non-toxic, dermatologically acceptable vehicle.

10. A method of treating dry skin in a patient which comprises topically administering to the area of dry skin in the patient a composition comprising (a) an effective amount of dehydroepiandrosterone and/or a pharmaceutically acceptable, therapeutically effective derivative thereof and (b) a keratolytic agent in an amount sufficient to counteract the formation of acne-like skin lesions without diminishing the effectiveness of dehydroepiandrosterone or its derivative.

4,542,130

5-AMINOMETHYL-1,3-OXATHIOLANE MICROBICIDES, COMPOSITIONS AND USE

Joachim Weissmüller; Wolfgang Krämer; Dieter Berg, all of Wuppertal; Paul Reinecke, Leverkusen; Wilhelm Brandes, Leichlingen, and Gerd Hänssler, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

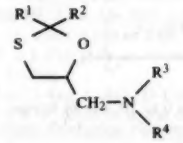
Filed Jun. 27, 1984, Ser. No. 624,889

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1983, 3324769

Int. Cl.⁴ A01N *43/28, 43/84;* **C07D** *327/04, 413/06*

U.S. Cl. 514—212 **11 Claims**

1. A 5-aminomethyl-1,3-oxathiolane of the formula



in which

R^1 is tetrahydronaphthyl, decahydronaphthyl or optionally substituted naphthyl, optionally substituted cycloalkyl or cycloalkenyl, optionally substituted phenyl, or alkyl which is substituted by phenyl, phenoxy, phenylthio, cyclohexyl, cyclohexyloxy or cyclohexylthio, each of which is optionally substituted,

R^2 is hydrogen or methyl,

R^3 is alkyl, and

R^4 is alkyl, alkenyl or optionally substituted aralkyl, or

R^3 and R^4, together with the nitrogen atom to which they are bonded, form an optionally substituted saturated heterocyclic structure which can contain further heteroatoms,

or a plant-tolerated addition product thereof with an acid or metal salt,

9. A microbicidal composition comprising a microbicidally effective amount of a compound or addition product according to claim **1** in admixture with a diluent.

4,542,131
SUBSTITUTED DIAZOLO[b][1,5]BENZODIAZEPINES AND THEIR USE AS CNS AGENTS

Jiban K. Chakrabarti, Camberley, and Terrence M. Hotten, Farnborough, both of England, assignors to Lilly Industries Limited, London, England

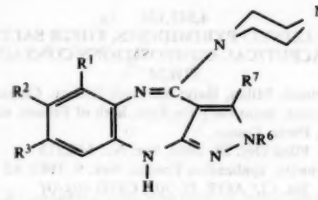
Division of Ser. No. 426,580, Sep. 29, 1982, , which is a division of Ser. No. 193,200, Oct. 2, 1980, Pat. No. 4,404,137. This application Aug. 6, 1984, Ser. No. 638,181

Claims priority, application United Kingdom, Oct. 16, 1979, 7935846

Int. Cl.⁴ C07D *487/04;* A61K *31/33*

U.S. Cl. 514—220 **9 Claims**

1. A compound of the formula



in which R^1, R^2 and R^3 independently represent hydrogen, halogen or C_{1-4} haloalkyl, R^6 is C_{1-6} alkyl, C_{3-7} cycloalkyl or C_{3-7} cycloalkyl C_{1-4} alkyl, R^7 is hydrogen and R^9 is hydrogen, C_{1-4} alkyl, C_{3-7} cycloalkyl C_{1-4} alkyl or benzyl.

4,542,132
CARDIAC STIMULATING CYCLIC SULFONAMIDO SUBSTITUTED 4-PIPERIDINO-QUINAZOLINE DERIVATIVES, COMPOSITIONS, AND METHOD OF USE THEREFOR

Simon F. Campbell, Kingsdown; Albert A. Jaxa-Chamiec, Marlow, and David A. Roberts, Woodnesborough, all of England, assignors to Pfizer Inc., New York, N.Y.

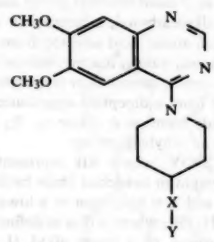
Filed Jul. 31, 1984, Ser. No. 636,197

Claims priority, application United Kingdom, Aug. 3, 1983, 8320958

Int. Cl.⁴ A61K *31/54, 31/445, 31/505;* C07D *417/14*

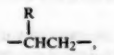
U.S. Cl. 514—222 **17 Claims**

1. A piperidinoquinazoline compound of the formula



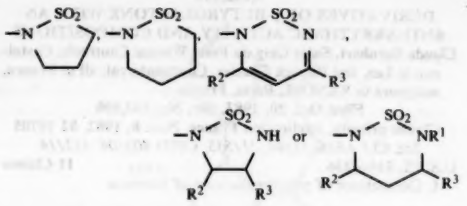
or a pharmaceutically acceptable salt thereof, wherein:

X is an alkylene group of the formula



where R is H, CH_3 or C_2H_5;

Y is a group of the formula:



where R^1 is H or C_1–C_4 alkyl, and R^2 and R^3 are each independently H or CH_3; and either:

(i) the piperidine ring is further substituted with a hydroxy group in the 3- or 4-position, and, if it is substituted with a hydroxy group in the 3-position, it can be further substituted in the same position with a C_1–C_4 alkyl group; or

(ii) the carbon atom of X attached to the piperidine ring is further substituted with a hydroxy group.

4,542,133
METHYLENEDIOXY QUINO-BENOXAZINE DERIVATIVES AND ANTIBACTERIAL USE

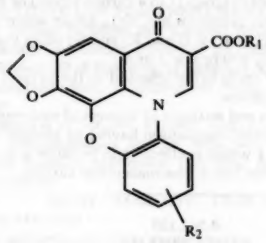
Daniel T. Chu, Vernon Hills, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Apr. 26, 1984, Ser. No. 604,191

Int. Cl.⁴ A61K *31/535;* C07D *498/14*

U.S. Cl. 514—232 **9 Claims**

1. A compound having the formula:



(I)

wherein R_1 is hydrogen or a carboxy protecting group; R_2 is one or more groups selected from the group consisting of hydrogen, halogen, nitro, methylenedioxy, carboxyl, cyano, C_1 to C_6 alkyl, halo-substituted C_1 to C_6 alkyl, hydroxy-substituted C_1 to C_6 alkyl, a group having the formula:

$$-Y-R_3$$

wherein —Y— is —O— or —S— and R_3 is hydrogen or C_1 to C_6 alkyl, and an amine group having the formula:

wherein R_4 and R_5 are independently hydrogen or C_1 to C_6 alkyl; and, pharmaceutically acceptable salts thereof.

9. A method of treating a bacterial infection in a patient comprising administering to a patient in need of such treatment a therapeutically effective amount of a compound as defined in claim 1.

4,542,134

DERIVATIVES OF γ-BUTYROLACTONE WITH AN ANTI-ARRYTHMIC ACTIVITY AND COMPOSITIONS

Claude Bernhart, Saint Gely du Fesc; Werner Cautreels, Castelnau le Lez, and Patrick Gautier, Cournonterral, all of France, assignors to SANOFI, Paris, France

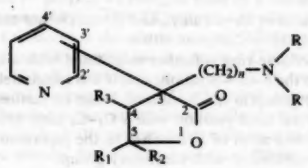
Filed Oct. 20, 1983, Ser. No. 543,898

Claims priority, application France, Nov. 8, 1982, 82 18705

Int. Cl.⁴ A61K *31/44, 31/535;* **C07D** *405/04, 413/14*

U.S. Cl. 514—236 **11 Claims**

1. Derivatives of γ-butyrolactone of formula:



(I)

in which:

R represents a straight or branched alkyl group having from 2 to 5 atoms of carbon, or the group

represents a morpholino or piperidino group possibly substituted by 1 to 4 methyl groups;

n=2 or 3;

R_1 and R_2 considered independently each represent hydrogen or a lower alkyl group (1 to 4 carbon atoms) or R_1 and R_2 taken together represent a $(CH_2)_m$ group where m=4 or 5, and R_3 is H or R_1 is H and R_2 and R_3 taken together represent $(CH_2)_p$ where p is 3 or 4

the butyrolactone cycle being attached to the pyridyl cycle in 2', 3' or 4' position;

and the salts, isomers and mixtures of isomers of said products.

10. A pharmaceutical composition having an amount of the compound of claim 1 which is effective to produce a myocardium-protecting effect, and a pharmaceutical carrier.

4,542,135

9'THIA-ERGOTS

Hans Kobel, Basel; Jean-Jacques Sanglier, Oberwil; Hans Tscherter, Allschwil, and Georg Bolliger, Binningen, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

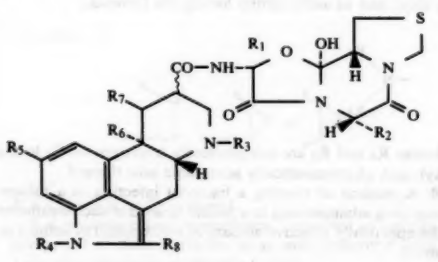
Filed Aug. 3, 1982, Ser. No. 404,832

Claims priority, application Switzerland, Aug. 7, 1981, 5104/81

Int. Cl.⁴ C07D *519/02;* **A61K** *31/48*

U.S. Cl. 514—250 **15 Claims**

1. A compound of formula I



I

wherein

R_1 is (C_{1-4})alkyl,

R_2 is (C_{1-6})alkyl or benzyl,

R_3 and R_4 independently are hydrogen or (C_{1-4})alkyl,

R_5 is hydrogen or bromine,

R_6 and R_7 are each hydrogen, or

R_6 and R_7 together form a single bond, or

R_6 is methoxy and R_7 is hydrogen, and

R_8 is hydrogen, methyl, or halogen of atomic number from 9 to 35,

with the proviso that when R_5 is bromine R_7 is hydrogen, in free base form or in pharmaceutically acceptable acid addition salt form.

4,542,136

2-(1-PIPERAZINYL) PYRIMIDINES, THEIR SALTS AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Paolo Carminati, Milan, Italy; Kathleen Biziere, Clapiers, and André Hallot, Saint Gely Du Fesc, both of France, assignors to Sanofi, Paris, France

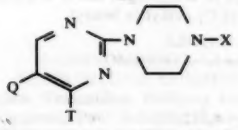
Filed Oct. 28, 1983, Ser. No. 546,273

Claims priority, application France, Nov. 9, 1982, 82 18819

Int. Cl.⁴ A61K *31/505;* **C07D** *403/04*

U.S. Cl. 514—252 **3 Claims**

1. 2-(1-piperazinyl)pyrimidines of formula:

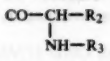


(I)

in which one of radicals T and Q represents hydrogen, a hydroxyl or lower alkylcarbonyl group and the other represents hydrogen; and X represents:

a group CO—R_1 where R_1 is a lower alkyl

a group



where R_2 is hydrogen, or a lower alkyl, phenyl, p-hydroxyphenyl, benzyl, p-hydroxybenzyl, hydroxymethyl, 1-hydroxyethyl or 3-indolylmethyl group and R_3 is hydrogen, a lower alkylcarbonyl, a benzoyl or an acyl group derived from an amino acid selected from: glycine, phenylglycine, alanine, valine, leucine, isoleucine, phenylalanine, tyrosine, serine, threonine or tryptophane, or an acyl group derived from a dipeptide constituted from two of the amino acids mentioned above or R_2 and R_3 taken together form an ethylene group;

a group Alk—COOY, where Alk represents an alkylene group with straight or branched chain having from 1 to 4 carbon atoms and Y is hydrogen or a lower alkyl;

a group Alk—CH_2OZ, where Alk is as defined hereinabove and Z is hydrogen, or a lower alkyl, (Lower alkoxy)-lower alkyl, lower alkylcarbonyl group;

a group Alk—CO—W where Alk is as defined hereinabove and W is a lower alkyl group,

as well as the pharmaceutically acceptable acid addition salts thereof.

2. Pharmaceutical compositions useful in the treatment of psychic, neurological and neuromuscular disorders, comprising an effective amount of at least one active ingredient within the scope of claim 1, in association with a pharmaceutically acceptable carrier.

4,542,137

ALKYLAMINODESOXY-1.4;3.6-DIANHYDROHEXITOL NITRATES SUBSTITUTED BY PURINE BASES AND PHARMACEUTICAL COMPOSITIONS

Klaus Klessing, Ettlingen, and Shyam S. Chatterjee, Karlsruhe, both of Fed. Rep. of Germany, assignors to Dr. Willmar Schwabe GmbH & Co., Karlsruhe, Fed. Rep. of Germany

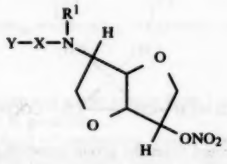
Filed Jul. 20, 1981, Ser. No. 285,425

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1980, 3028272

Int. Cl.⁴ A61K *31/52*; C07D *473/08*

U.S. Cl. 514—265 22 Claims

1. Alkylaminodesoxy-1.4;3.6-dianhydrohexitol nitrates substituted by purine bases having the formula



(I)

wherein R^1 signifies a hydrogen atom or lower alkyl with 1 to 4 C-atoms, X is a straight-chained, branched alkyl, or hydroxyalkyl, with 1 to 7 C-atoms, Y is 1,3-dialkylxanthin-7-yl, a 3,7-dialkylxanthin-1-yl group, each with straight or branched-chained alkyl groups having 1 to 5 C-atoms, and their physiologically acceptable acid-addition salts.

22. A composition comprising a pharmaceutically effective amount of the nitrate of claim 1 and pharmaceutically acceptable carriers therefor.

4,542,138

DIOXOBENZOCYCLO-HEPTA-PYRIDINE COMPOUNDS, PROCESS AND USE AS ANTIHYPERTENSIVES

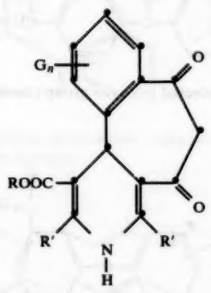
Steven D. Young, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed May 8, 1984, Ser. No. 608,292

Int. Cl.⁴ C07D *221/06*; A61K *31/45*

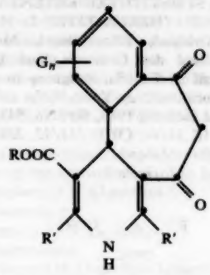
U.S. Cl. 514—290 5 Claims

1. A dioxobenzocycloheptapyridine compound represented by the formula



wherein G is lower alkyl or halogen; R is lower alkyl, R' is hydrogen, lower alkyl, and n is from 0 to 2.

5. A method for treating hypertension which comprises administering a non-toxic therapeutically active amount of a compound having the structure:



wherein G is loweralkyl or halogen, R is lower alkyl, R' is hydrogen or lower alkyl and n is from 0 to 2, in an intimate admixture with a pharmaceutically acceptable carrier.

4,542,139

SULFONYLUREAS PHARMACEUTICAL FORMULATIONS BASED ON THESE COMPOUNDS AND THEIR USE FOR TREATMENT OF DIABETES

Volker Hitzel, Hofheim am Taunus; Rudi Weyer, Kelkheim (Taunus); Karl Giesen, Frankfurt am Main, and Harald Ritzel, Mainz, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

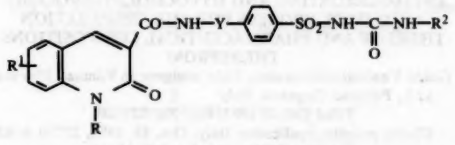
Continuation of Ser. No. 413,561, Aug. 31, 1982, abandoned. This application Apr. 26, 1984, Ser. No. 603,987

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1981, 3134780

Int. Cl.⁴ A61K *31/47*; C07D *215/54*

U.S. Cl. 514—312 4 Claims

1. A sulfonylurea of the formula



in which Y denotes alkylene having 2–3 C atoms, R denotes alkyl having 1–4 C atoms, R^1 denotes hydrogen, chlorine or methyl and R^2 denotes alkyl having 3–6 C atoms, cycloalkyl, alkylcycloalkyl, cycloalkylalkyl, cycloalkenyl, alkylcycloalkenyl or cycloalkenylalkyl, each having 5–8 C atoms, or a physiologically tolerated salt thereof.

3. A pharmaceutical preparation for the treatment of diabetes comprising an amount of a sulfonylurea or salt thereof as in claim 1 effective to reduce blood sugar and a pharmaceutical carrier therefor.

4. A method for treating diabetes in a patient suffering therefrom which comprises orally administering to said patient a blood sugar lowering amount of a sulfonylurea or a salt thereof as in claim 1.

4,542,140

PYRIDINYL SUBSTITUTED KETENEMERCAPTAL DERIVATIVES

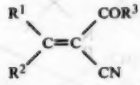
Jehan Bagli, Kirkland; Tibor Bógri, Montreal; Bozidar Palameta, Dollard des Ormeaux, and Luis E. Borella, Beaconsfield, all of Canada, assignors to American Home Products Corporation, New York, N.Y.

Filed Oct. 20, 1983, Ser. No. 543,712

Int. Cl.[4] A61K *31/44;* **C07D** *213/32, 213/62, 401/12*

U.S. Cl. 514—332 **13 Claims**

1. A compound of formula I



(I)

wherein R^1 is $S(CH_2)_m$—Het in which m is an integer from zero to three and Het is an unsubstituted or monosubstituted heterocyclic selected from the group consisting of pyridinyl, (N-oxide)pyridinyl, the substituent being selected from lower alkyl, lower alkoxy, halo, trifluoromethyl or $(CH_2)_nCOOQ$ wherein n is an integer from 0 to 2 and Q is lower alkyl; R^2 is lower alkylthio, lower alkenylthio or $S(CH_2)_m$—Het wherein m and Het are as defined herein; and R^3 is lower alkoxy or amino.

10. A method for preventing or treating gastrointestinal ulcers in a mammal, which comprises administering to the mammal in need thereof an effective amount of the compound of claim **1**, or a therapeutically acceptable acid addition salt of the compound provided that it has a basic nitrogen.

11. A method for preventing or decreasing the secretion or availability of excessive amounts of gastric acid in a mammal suffering from hyperchlorhydria, which comprises administering to the mammal in need thereof an effective amount of the compound of claim **1**, or a therapeutically acceptable acid addition salt of the compound provided that it has a basic nitrogen.

4,542,141

COMPOUND HAVING VASODILATING, ANTIAGGREGATING AND HYPOCHOLESTEROLEMIC ACTIVITIES, PROCESS FOR THE PREPARATION THEREOF AND PHARMACEUTICAL COMPOSITIONS THEREFROM

Guido Vandoni, Correzzana, Italy, assignor to Edmond Pharma s.r.l., Paderno Dugnano, Italy

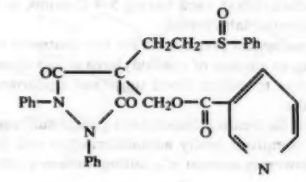
Filed Oct. 7, 1983, Ser. No. 539,839

Claims priority, application Italy, Oct. 15, 1982, 23770 A/82

Int. Cl.[4] C07D *401/12;* **A61K** *31/44*

U.S. Cl. 514—341 **3 Claims**

1. 1,2-Diphenyl-4-[2-(phenylsulfinyl)ethyl]-4-(nicotinoyloxymethyl)-pyrazolidine-3,5-dione, having formula (I):



(I)

4,542,142

INSECTICIDAL CYCLOPROPANE CARBOXYLIC ACID DERIVATIVES WITH 3-UNSATURATED-SIDE CHAIN

Jacques Martel, Bondy; Jean Tessier, Vincennes, and André Teche, Paris, all of France, assignors to Roussel Uclaf, Paris, France

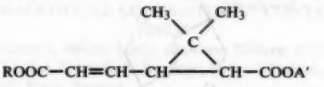
Continuation-in-part of Ser. No. 279,076, Jun. 30, 1981, abandoned. This application Nov. 8, 1983, Ser. No. 550,081

Claims priority, application France, Nov. 22, 1982, 82 19515; Jan. 28, 1983, 83 01344

Int. Cl.[4] C07D *213/55;* **C07C** *121/75;* **A01N** *43/40, 53/00*

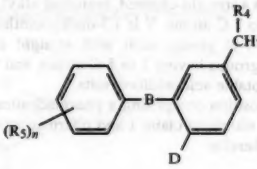
U.S. Cl. 514—345 **25 Claims**

1. A compound selected from the group consisting of cyclopropane carboxylic acid derivatives with a 3-unsaturated side chain of the formula



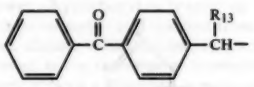
I'

wherein A' is selected from the group consisting of (1)



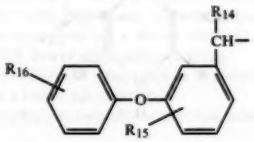
wherein B is selected from the group consisting of $—CH_2—$,

and —S—, R_4 is selected from the group consisting of hydrogen, $—CH_3$, —C≡N and —C≡CH, D is selected from the group consisting of hydrogen and fluorine, n is an integer from 0, 1 or 2 and R_5 is selected from the group consisting of halogen and $—CH_3$



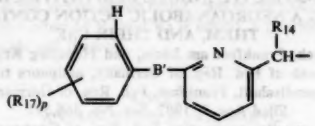
2

wherein R_{13} is selected from the group consisting of hydrogen and —CN,

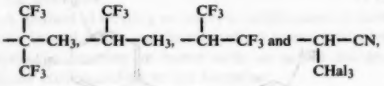


3

wherein R_{14} is selected from the group consisting of hydrogen, methyl, ethynyl and —CN and R_{15} and R_{16} are individually selected from the group consisting of hydrogen, bromine and fluorine and 4



wherein R_{14} has the above definition, p is 1, R_{17} is hydrogen, B' is selected from the group consisting of —O— and —S—, R is selected from the group consisting of $-(CH_2)_n-C-Hal_3$, $-(CH_2)_{npl}-CHHal_2$, $-(CH_2)_n-CH_2-Hal$, $-C-(CHal_3)_3$,



Hal is a halogen and n is an integer from 1 to 8, the double bond having Z or E geometry.

17. A method of combatting insects comprising contacting insects with an insecticidally effective amount of a compound of claim 1.

4,542,143

PYRIDYL CARBONYL ASCOCHLORIN DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THE SAME

Tomoyoshi Hosokawa, Kanagawa; Ikutoshi Matsuura; Hidenori Takahashi, both of Saitama; Kunio Ando, Kanagawa, and Gakuzo Tamura, Tokyo, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

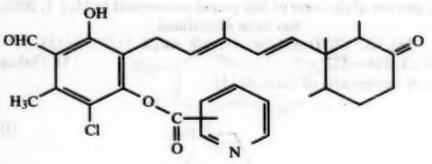
Division of Ser. No. 412,075, Aug. 27, 1982, Pat. No. 4,500,544. This application May 3, 1984, Ser. No. 607,400

Claims priority, application Japan, Sep. 10, 1981, 56-141660; Oct. 23, 1981, 56-168821

Int. Cl.[4] C07D *213/79, 213/80;* **A61K** *31/455*

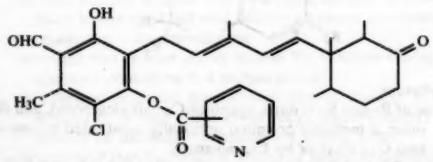
U.S. Cl. 514—356 **15 Claims**

1. An ascochlorin derivativee of the formula:



(I)

5. An anti-diabetic composition comprising an ascochlorin derivative of the formula



in an amount effective to treat diabetes, and a pharmaceutically acceptable carrier.

4,542,144

ANTICONVULSANT N-ARYL-N'-(2-THIAZOLIDINYLIDENE)UREAS

Chris R. Rasmussen, Ambler, Pa., assignor to McNeilab Inc., Fort Washington, Pa.

Continuation-in-part of Ser. No. 321,670, Nov. 16, 1981, abandoned. This application Sep. 19, 1983, Ser. No. 533,671

Int. Cl.[4] C07D *277/18;* **A61K** *31/425*

U.S. Cl. 514—371 **19 Claims**

1. An N-aryl-N'-(2-thiazolidinylidene)urea derivative selected from the group consisting of:

N-(2,6-dimethylphenyl)-N'-(3-methyl-2-thiazolidinylidene)urea,

N-(2,6-dichlorophenyl)-N'-(3-methyl-2-thiazolidinylidene)urea,

N-(2-methoxyphenyl)-N'-(3-methyl-2-thiazolidinylidene)urea,

N-(2-trifluoromethylphenyl)-N'-(3-methyl-2-thiazolidinylidene)urea,

N-(2,6-diethylphenyl)-N'-(3-methyl-2-thiazolidinylidene)urea,

N-(2-ethyl-6-methylphenyl)-N'-(3methyl-2-thiazolidinylidene)urea,

N-(2,5-dimethylphenyl)-N'-(3-methyl-2-thiazolidinylidene)urea,

N-(2,4-dimethylphenyl)-N'-(3-methyl-2-thiazolidinylidene)urea,

N-(2,3-dimethylphenyl)-N'-(3-methyl-2-thiazolidinylidene)urea,

N-(2,4,6-trimethylphenyl)-N'-(3-methyl-2-thiazolidinylidene)urea,

N-(2-chloro-6-methylphenyl)-N'-(3-methyl-2-thiazolidinylidene)urea.

N-(2,6-difluorophenyl)-N'-(3-methyl-2-thiazolidinylidene)-urea,

N-(2,6-dibromophenyl)-N'-(3-methyl-2-thiazolidinylidene)urea,

N-(2,6-dibromo-4-fluorophenyl)-N'-(3-methyl-2-thiazolidinylidene)urea,

N-(2,6-dimethoxyphenyl)-N'-(3-methyl-2-thiazolidinylidene)urea, and

N-(2,6-dimethylphenyl)-N'-(2-thiazolidinylidene)urea.

4,542,145

SUBSTITUTED N-[(1H-1,2,4-TRIAZOL-1-YL)-ALKYL]HETEROARYL-CARBOXAMIDES

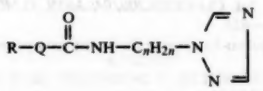
William B. Wright, Jr., Woodcliff Lake, N.J.; Jeffery B. Press, Tuxedo, N.Y., and Andrew S. Tomcufcik, Old Tappan, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Feb. 29, 1984, Ser. No. 584,701

Int. Cl.[4] A61K *31/41;* **C07D** *405/12, 409/12*

U.S. Cl. 514—383 **23 Claims**

1. A compound selected from those of the formula:



wherein n is an integer 2–5; R is a heteroaryl moiety selected from the group consisting of furanyl, mono- and disubstituted furanyl (wherein the substituents are selected from nitro and bromo), thiophene, mono- and disubstituted thiophene [wherein the substituents are selected from halogen and alkyl(-C_1–C_3)], benzofuran and 3-chlorobenzo[b]thiophene; Q is

—CH=CH—, or C_mH_{2m} where m is an integer 0–4; and the pharmacologically acceptable acid-addition salts thereof.

20. A method of inhibiting thromboxane synthetase enzyme

in a mammal which comprises administering to said mammal a sufficient amount of a compound of claim 1 to effectively inhibit thromboxane synthetase enzyme in said mammal.

22. A method for inhibiting hypertension in a mammal which comprises administering to said mammal a hypotensive amount of a compound of claim 1.

4,542,146

PROCESS FOR THE PROTECTION OF WOOD AND COATINGS AGAINST DETERIORATION BY MICROORGANISMS

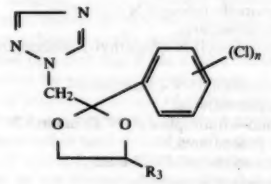
Josef Van Gestel, Vosselaar; Benedikt Duytschaever, Ekeren, both of Belgium; René Muntwyler, Hofstetten, and Max Schärer, Rheinfelden, both of Switzerland, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Continuation of Ser. No. 373,073, Apr. 29, 1982, abandoned, which is a continuation of Ser. No. 230,151, Jan. 30, 1981, abandoned. This application Nov. 2, 1983, Ser. No. 548,252

Int. Cl.⁴ A01N *43/48*

U.S. Cl. 514—383 **6 Claims**

1. A method of protecting wood products or wood product coatings from deterioration by microorganisms which comprises applying to or incorporating in said wood products or coatings an antimicrobially effective amount of at least one compound selected from the group consisting of an azole derivative having the formula



and the organic and inorganic acid addition salts thereof, where R_3 is hydrogen or C_1–C_3 alkyl and n is 1 or 2.

4,542,147

PERFLUORO-1-AZATRICYCLIC AMINE COMPOUND

Kazumasa Yokoyama, Toyonaka; Chikara Fukaya, Osaka; Yoshio Tsuda, Takarazuka; Taizo Ono, Osaka; Yoshio Arakawa, Suita; Yoshihisa Inoue, Kyoto; Youichiro Naito, Hirakata, and Tadakazu Suyama, Kyoto, all of Japan, assignors to The Green Cross Corporation, Osaka, Japan

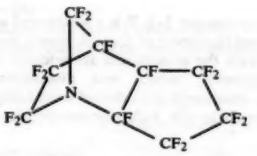
Filed Jun. 17, 1983, Ser. No. 505,322

Claims priority, application Japan, Aug. 7, 1982, 57-137663; Aug. 7, 1982, 57-137664; Aug. 7, 1982, 57-137665

Int. Cl.⁴ C07D *209/94;* A61K *31/40*

U.S. Cl. 514—411 **4 Claims**

1. A perfluoro-1-azatricyclic amine compound of the formula:



any carbon of the formula being optionally substituted with at least one trifluoromethyl group or one pentafluoroethyl group.

2. A composition for use as a blood substitute or infusion fluid which composition is an aqueous emulsion of a compound of the formula given and defined in claim 1.

4,542,148

2-OXO-3-PHENYL INDOLE DERIVATIVES, DRUGS HAVING A NEUROANABOLIC ACTION CONTAINING THEM, AND THEIR USE

Heinz Kuch, Frankfurt am Main, and Hansjörg Kruse, Kelkheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

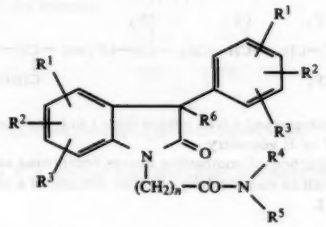
Filed Apr. 7, 1982, Ser. No. 366,321

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1981, 3114351

Int. Cl.⁴ A61K *31/40;* C07D *209/34*

U.S. Cl. 514—418 **6 Claims**

1. A compound of the formula



in which n is 1, 2, or 3, R^1, R^2 and R^3 are identical or different and independently of one another are hydrogen, halogen, straight-chain or branched alkyl having 1 to 4C atoms, trifluoromethyl, methylenedioxy, alkoxy having 1 to 3C atoms, or nitro, R^4 and R^5 are identical or different and independently of one another are hydrogen or straight-chain or branched alkyl which has 1 to 6C atoms and R^6 is hydrogen, alkyl having 1 to 5C atoms or hydroxyl with the proviso that R_1, and R_2 and R_3 together are not trinitro or di- or tri-adjacent t-butyl.

6. A method for treating a patient having a functional disorder of the brain which comprises administering to the patient an effective amount of a compound as defined in claim 1.

4,542,149

4-AMINO-BENZO[B]PYRAN-3-OL DERIVATIVES

John M. Evans, Roydon; Robin E. Buckingham, Welwyn Garden City, and Kenneth Willcocks, Harlow, all of England, assignors to Beecham Group p.l.c., England

Filed Apr. 6, 1983, Ser. No. 482,628

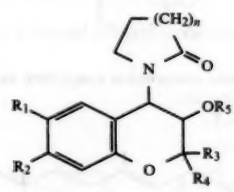
Claims priority, application United Kingdom, Apr. 8, 1982, 8210490

The portion of the term of this patent subsequent to May 1, 2001, has been disclaimed.

Int. Cl.⁴ C07D *405/04, 311/68;* A61K *31/35, 31/33*

U.S. Cl. 514—422 **11 Claims**

1. A compound of formula (I):



(I)

wherein:

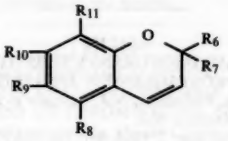
one of R_1 and R_2 is nitro, cyano or C_{1-3} alkylcarbonyl, and the other is methoxy or amino optionally substituted by one or two C_{1-6} alkyl or by C_{2-7} alkanoyl;

one of R_3 and R_4 is hydrogen or C_{1-4} alkyl and the other is C_{1-4} alkyl, or R_3 and R_4 together with the carbon atom to which they are attached are C_{3-6} spiroalkyl;

R_5 is hydrogen, C_{1-3} alkyl or C_{1-8} carboxylic acyl; and
n is 1 or 2; the lactam group being trans to the OR_5 group; or, when the other of R_1 and R_2 is amino, a pharmaceutically acceptable salt thereof.

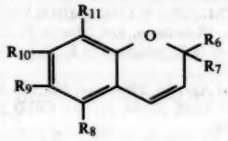
4,542,150
ANTI-JUVENILE HORMONES
William S. Bowers, Geneva, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.
Continuation-in-part of Ser. No. 739,886, Nov. 8, 1976, which is a continuation-in-part of Ser. No. 613,991, Sep. 17, 1975, abandoned. This application Mar. 2, 1981, Ser. No. 239,744
Int. Cl.[4] A01N *43/08*; C07O *311/02*
U.S. Cl. 514—456 **21 Claims**

1. A method of treating an insect to inhibit juvenile hormone activity in said insect and thereby effect insect control which comprises contacting an insect with an active anti-juvenile hormone corresponding to the formulae:



wherein
R_6 and R_7 are each hydrogen, or straight or branch chain lower alkyl containing 1–4 carbon atoms; and
R_8, R_9, R_{10} and R_{11} are each hydrogen, straight or branch chain lower alkyl, alkenyl, alkoxy, alkynoxy or alkenoxy containing 1–4 carbon atoms;
provided that at least one of R_9 and R_{10} is lower alkoxy or alkenoxy containing 1–4 carbon atoms;
and further provided that at least one of R_8 and R_{11} is straight or branch chain lower alkyl, alkenyl, alkoxy alkynoxy or alkenoxy containing 1–4 carbon atoms;
or provided that R_{10} is lower alkoxy or alkenoxy containing 1–4 carbon atoms and at least one of R_8, R_9 and R_{11} is phenyl;
or provided that R_{10} is lower alkoxy or alkenoxy containing 1–4 carbon atoms and R_9 is lower alkyl containing 1–4 carbon atoms.

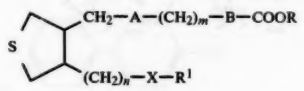
11. An active anti-juvenile hormone corresponding to the formulae:



wherein
R_6 and R_7 are each hydrogen, or straight or branch chain lower alkyl containing 1–4 carbon atoms; and
R_8, R_9, R_{10} and R_{11} are each hydrogen, straight or branch chain lower alkyl, alkenyl, alkoxy alkynoxy or alkenoxy containing 1–4 carbon atoms;
provided that at least one of R_9 and R_{10} is lower alkoxy or alkenoxy containing 1–4 carbon atoms;
and further provided that at least one of R_8 and R_{11} is straight or branch chain lower alkyl, alkenyl, alkoxy alkynoxy or alkenoxy containing 1–4 carbon atoms;
or provided that R_{10} is lower alkoxy or alkenoxy containing 1–4 carbon atoms and at least one of R_8, R_9 and R_{11} is phenyl;
or provided that R_{10} is lower alkoxy or alkenoxy containing 1–4 carbon atoms and R_9 is lower alkyl containing 1–4 carbon atoms.

4,542,151
TETRAHYDROTHIENYL SUBSTITUTED ETHERS
Jagabandhu Das, Plainsboro, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.
Filed Dec. 17, 1984, Ser. No. 682,712
Int. Cl.[4] A61K *31/38*; C07D *333/24*
U.S. Cl. 514—438 **18 Claims**

1. A compound of the structure



including all stereoisomers thereof, wherein A is $(CH_2)_2$, CH=CH or a single bond; B is a single bond or —CH=CH—; m is 1 to 8; n is 1 to 4; X is O or

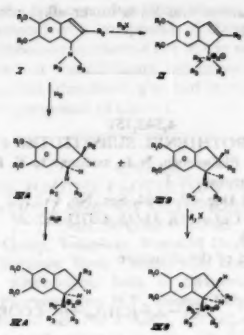
wherein n' is 0, 1 or 2; R is H, lower alkyl or alkali metal; and R^1 is lower alkyl, aryl, arylalkyl, cycloalkyl, cycloalkylalkyl or lower alkenyl.

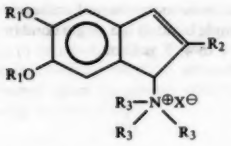
4,542,152
5-[PHENYLSULFONYL(OR SULFINYL)]THIOPHENE-2-SULFONAMIDES FOR THE TOPICAL TREATMENT OF ELEVATED INTRAOCULAR PRESSURE
Kenneth L. Shepard, North Wales, Pa., assignor to Merck & Co., Inc., Rahway, N.J.
Continuation-in-part of Ser. No. 497,388, May 23, 1983, abandoned. This application Jun. 20, 1983, Ser. No. 505,673
Int. Cl.[4] A61K *31/38*
U.S. Cl. 514—445 **9 Claims**

1. An ophthalmic composition for the topical treatment of glaucoma and ocular hypertension comprising a solid water soluble polymer and from 0.1 to 35% by weight of the carbonic anhydrase inhibitor 5-[(4-hydroxyphenyl)sulfonyl]thiophene-2-sulfonamide.

4,542,153
METHODS FOR CHANGING CALCIUM METABOLISM WITHIN THE CELLS OF A MAMMAL
Donald T. Witiak, Mount Vernon, and Ralf G. Rahwan, Columbus, both of Ohio, assignors to The Ohio State University Research Foundation, Columbus, Ohio
Continuation-in-part of Ser. No. 261,008, May 6, 1981, Pat. No. 4,393,226. This application May 11, 1983, Ser. No. 493,601
Int. Cl.[4] A61K *31/36*
U.S. Cl. 514—466 **24 Claims**

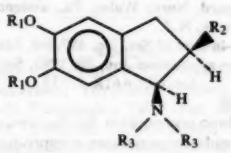
1. A method for treating a mammal having a condition selected from the group consisting of arrhythmia, hypertension, constriction of the coronary artery and angina pectoris, which method comprises administering to said mammal from about 0.25 to about 10 mg/kg. body weight of said mammal of a pharmaceutically acceptable 2-alkyl-5,6-dialkoxy-indene-1-trialkylammonium salt of the Formula II





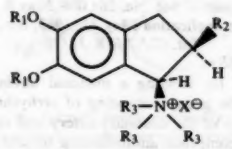
wherein the two R_1 groups together form an alkylene group of 1 to 3 carbon atoms, R_2 is an alkyl group of 1 to about 8 carbon atoms, each R_3 independently is an alkyl group of 1 to 3 carbon atoms and X is an anion.

9. A method for treating a mammal having a condition selected from the group consisting of arrhythmia, hypertension, constriction of the coronary artery and angina pectoris, which method comprises administering to said mammal from about 0.25 to about 10 mg/kg. body weight of said mammal of a cis 2-alkyl-5,6-dialkoxy-1-dialkylaminoindane of the formula



wherein the two R_1 groups together form an alkylene group of 1 to 3 carbon atoms, R_2 is an alkyl group of 1 to about 8 carbon atoms and each R_3 independently is an alkyl group of 1 to 3 carbon atoms.

17. A method for treating a mammal having a condition selected from the group consisting of arrhythmia, hypertension, constriction of the coronary artery and angina pectoris, which method comprises administering to said mammal from about 0.25 to about 10 mg/kg. body weight of said mammal of a cis 2-alkyl-5,6-dialkoxyindane-1-trialkylammonium salt of the Formula



wherein the two R_1 groups together form an alkylene group of 1 to 3 carbon atoms, R_2 is an alkyl group of 1 to about 8 carbon atoms, each R_3 independently is an alkyl group of 1 to 3 carbon atoms and X^- is a pharmaceutically-acceptable anion.

4,542,154

ANTIBIOTIC COMPOUND

Katsuhisa Ohsugi, Iwaki; Junji Ichida, Kodaira, and Eisaku Takahashi, Iwaki, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Nihonbashi, Japan

Filed Jul. 8, 1983, Ser. No. 512,138

Claims priority, application Japan, Jul. 23, 1982, 57-128693; Aug. 3, 1982, 57-135557

Int. Cl.[4] A61K *31/335;* **C07D** *303/38*

U.S. Cl. 514—475 **2 Claims**

1. 3-(6-isocyano-3,7-dioxatricyclo[4.1.0.0^{2,4}]hept-4-yl)-propenoic acid.

2. An antibacterial composition comprising an antibacterially effective amount of 3-(6-isocyano-3,7-dioxatricyclo[4.1.0.0^{2,4}]hept-4-yl)-propenoic acid and a pharmaceutical carrier.

4,542,155

TETRAHYDROFURANYL SUBSTITUTED PROSTAGLANDIN ANALOGS

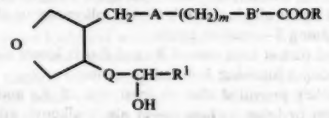
Jagabandhu Das, Plainsboro, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 2, 1984, Ser. No. 595,772

Int. Cl.[4] C07D *307/16*

U.S. Cl. 514—461 **17 Claims**

1. A compound of the structure



including all stereoisomers thereof, wherein A is $-(CH_2)_2-$, $-CH=CH-$ or a single bond; m is 1 to 8; B' is $-CH=CH-$ or a single bond, but where B' is $-CH=CH-$, m is 1 to 6; Q is $-CH=CH-$ or $-(CH_2)_n-$; n is 1 to 4; R is H, lower alkyl or alkali metal; and R^1 is aryl, cycloalkyl or cycloalkylalkyl.

4,542,156

7-OXABICYCLOHEPTANE SUBSTITUTED PROSTAGLANDIN ALCOHOLS AND THEIR USE IN THE TREATMENT OF THROMBOLYTIC DISEASE

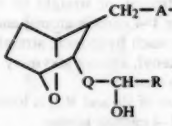
Jagabandhu Das, Plainsboro, and Martin F. Haslanger, Lambertville, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 26, 1984, Ser. No. 604,342

Int. Cl.[4] A61K *31/34, 31/557;* **C07D** *307/00*

U.S. Cl. 514—469 **9 Claims**

1. A compound having the structural formula



and including all stereoisomers thereof, wherein A is $-CH=CH-(CH_2)_n-$ or $(CH_2)_q$; B is $-CH=CH-$; n is 1 to 3; q is 1 to 4; Q is $-CH=CH-$ or $(CH_2)_2$; and R is lower alkyl, aryl, aralkyl, cycloalkyl, cycloalkylalkyl or lower alkenyl, wherein the term lower alkyl or alkyl by itself or as part of another group contains 1 to 12 carbons and is unsubstituted or substi-

tuted with halo, trifluoromethyl, alkoxy, aryl, alkyl-aryl, haloaryl, cycloalkyl or alkylcycloalkyl;

the term aryl by itself or as part of another group contains 6 to 10 carbons and is unsubstituted or substituted with 1 or 2 lower alkyl groups, 1 or 2 halogens and/or 1 or 2 lower alkoxy groups;

the term cycloalkyl by itself or as part of another group contains 3 to 12 carbons and is unsubstituted or substituted with 1 or 2 halogens, 1 or 2 lower alkyl groups and/or 1 or 2 lower alkoxy groups,

the term lower alkenyl contains 2 to 12 carbons;

the term $(CH_2)_n$ includes 1 to 3 carbons in the normal chain and the term $(CH_2)_q$ includes 1 to 4 carbons in the normal chain;

and the terms $(CH_2)_2$, $(CH_2)_n$ and $(CH_2)_q$ may be unsubstituted or include one or more lower alkyl substituents.

5. A method of inhibiting arachidonic acid-induced platelet aggregation and bronchoconstriction, which comprises administering to the circulatory system of a mammalian host an effective amount of a compound as defined in claim 1 or a pharmaceutically acceptable salt thereof.

4,542,157

7-OXABICYCLOHEPTANE SUBSTITUTED OXA PROSTAGLANDIN ANALOGS AND THEIR USE IN THE TREATMENT OF THROMBOLYTIC DISEASE

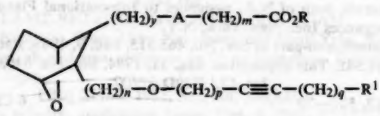
Steven E. Hall, Ewing Township, Mercer County, and Martin F. Haslanger, Lambertville, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 27, 1984, Ser. No. 604,717

Int. Cl.[4] A61K *31/34, 31/557;* **C07D** *307/00*

U.S. Cl. 514—469 **17 Claims**

1. A compound having the structural formula



and including all stereoisomers thereof, wherein

A is —CH=CH—, or $-(CH_2)_2-$;

y is 0 to 4; m is 0 to 8; n is 1 to 4; p is 1 to 12; q is 0 to 5;

R is hydrogen, lower alkyl, alkali metal or tri(hydroxymethyl)aminomethane; and R^1 is hydrogen, lower alkyl, aryl, aralkyl, cycloalkyl or cycloalkylalkyl, wherein the term lower alkyl or alkyl by itself or as part of another group contains 1 to 12 carbons and is unsubstituted or substituted with halo, trifluoromethyl, aryl, alkoxy, haloaryl, alkyl-aryl cycloalkyl or alkylcycloalkyl;

the term aryl by itself or as part of another group contains 6 to 10 carbons and is unsubstituted or substituted with 1 or 2 lower alkyl groups, 1 or 2 halogens and/or 1 or 2 lower alkoxy groups;

the term cycloalkyl by itself or as part of another group contains 3 to 12 carbons and is unsubstituted or substituted with 1 or 2 halogens, 1 or 2 lower alkyl groups and/or 1 or 2 lower alkoxy groups;

the term $(CH_2)_m$ includes 0 to 8 carbons in the normal chain, the term $(CH_2)_n$ includes 1 to 4 carbons in the normal chain, the term $(CH_2)_y$ includes 0 to 4 carbons in the normal chain, the term $(CH_2)_p$ includes 1 to 12 carbons in the normal chain, and the term $(CH_2)_q$ includes 0 to 5 carbons in the normal chain; and the terms $(CH_2)_y$, $(CH_2)_m$, $(CH_2)_n$, $(CH_2)_p$ and $(CH_2)_q$ may be unsubstituted or include one or more lower alkyl substituents.

10. A method of inhibiting platelet aggregation and bronchoconstriction, which comprises administering to the circulatory system of a mammalian host an effective amount of a compound as defined in claim 1 or a pharmaceutically acceptable salt thereof.

4,542,158

PRODRUG ESTERS OF DIFLUNISAL AND RELATED COMPOUNDS

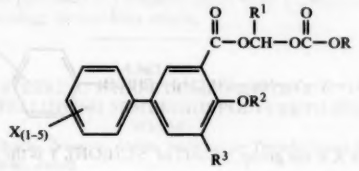
Conrad P. Dorn, Plainfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 332,426, Dec. 21, 1981, abandoned. This application Oct. 25, 1982, Ser. No. 435,151

Int. Cl.[4] A61K *31/265;* **C07C** *69/96*

U.S. Cl. 514—512 **6 Claims**

1. A compound of structural formula (I):



wherein:

R is

(a) C_{1-6}alkyl; or

(b) C_{3-6}cycloalkyl;

R^1 is

(a) hydrogen;

(b) C_{1-6}alkyl; or

(c) C_{3-6}cycloalkyl;

R^2 is

(a) hydrogen;

(b) C_{1-6}alkanoyl;

(c) C_{1-6}alkoxycarbonyl;

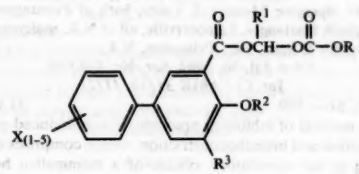
R^3 is

(a) hydrogen; or

(b) C_{1-6}alkyl; and

X is halo.

5. A method of treating and/or controlling inflammation, pain and fever comprising the administration of a mammal in need of such treatment an effective amount of a compound of formula:



wherein:

R is

(a) C_{1-6}alkyl; or

(b) C_{3-6}cycloalkyl;

R^1 is

(a) hydrogen;

(b) C_{1-6}alkyl; or

(c) C_{3-6}cycloalkyl;

R^2 is

(a) hydrogen;

(b) C_{1-6}alkanoyl;

(c) C_{1-6}alkoxycarbonyl;

R^3 is

(a) hydrogen; or

(b) C_{1-6}alkyl; and

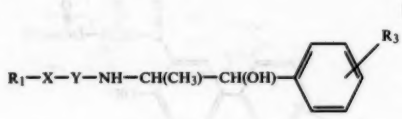
X is halo.

4,542,159
CYCLOALIPHATIC KETOAMINES

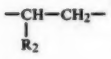
Jürgen Engel, Alzenau; Axel Kleemann, Hanau; Klaus Posselt, Bonn; Fritz Stroman, Offenbach, and Klaus Thiemer, Hanau, all of Fed. Rep. of Germany, assignors to Degussa Akteinsellschaft, Frankfurt, Fed. Rep. of Germany

Filed May 15, 1979, Ser. No. 39,436
Claims priority, application United Kingdom, May 17, 1978, 20049/78
Int. Cl.[4] A61K *31/135*; C07C *91/23, 91/34, 97/10*
U.S. Cl. 514—653 19 Claims

1. A compound of the formula



wherein X is the group >C=O or >CH(OH), Y is the group



R_2 is hydrogen or C_1 to C_6 alkyl, R_3 is hydrogen or a hydroxy group, and R_1 is the adamantyl group or a saturated C_3 to C_{16} cycloalkyl or single unsaturated C_3 to C_{16} cycloalkenyl group where the cycloalkyl or cycloalkenyl group is unsubstituted or substituted by C_1 to C_4 alkyl or by halogen or a pharmaceutically acceptable salt thereof

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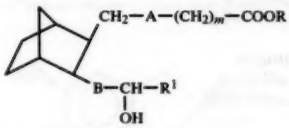
4,542,160
METHOD OF USE OF BICYCLOHEPTANE SUBSTITUTED PROSTAGLANDIN ANALOGS AS CARDIOVASCULAR AGENTS

Peter W. Sprague; Melanie J. Loots, both of Pennington, and Martin F. Haslanger, Lambertville, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jul. 30, 1984, Ser. No. 635,980
Int. Cl.[4] A61K *31/19, 31/21*
U.S. Cl. 514—569 11 Claims

1. A method of inhibiting arachidonic acid-induced platelet aggregation and bronchoconstriction, which comprises administering to the circulatory system of a mammalian host an effective amount of a compound having the structural formula



and including all stereoisomers thereof;

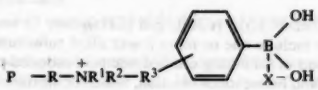
wherein A is $—CH_2—CH_2$ or —CH=CH—; m is 0 to 5; B is —CH=CH— or $(CH_2)_2$; R is H, lower alkyl, alkali metal or tris(hydroxymethyl)aminomethane; and R^1 is aralkyl, cycloalkyl or cycloalkylalkyl or a pharmaceutically acceptable salt thereof.

4,542,161
STABLE BORON RESINS OF HIGH SELECTIVE ABSORBENT POWER

Andrea Filippini, Prato, and Renato Carobbi, Pistoia, both of Italy, assignors to Sirac SPA, Milan, Italy

Division of Ser. No. 631,104, Jul. 16, 1984,. This application Dec. 26, 1984, Ser. No. 686,272
Claims priority, application Italy, Mar. 22, 1984, 20177 A/84
Int. Cl.[4] C08J *3/36*
U.S. Cl. 521—53 2 Claims

1. A porous boron resin having an average pore diameter of between 500 and 1500Å of general formula



in which

(P) is a polyacrylic matrix;

R and R^3, which can be the same or different, are $—(CH_2)_n—$ where n is between 0 and 5;

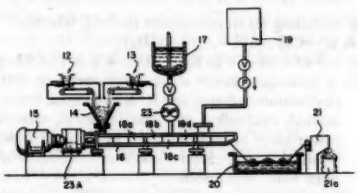
R^1 and R^2, which can be the same or different, are C_1–C_5 alkyl;

X^- is an amino chosen from the group consisting of OH and halides.

4,542,162
PROCESS FOR FORMING INSECT, ANIMAL OR BIRD REPELLENT FLUID AND SOLID-CONTAINING THERMOPLASTIC FILMS AND PELLETS, USES THEREOF AND PROCESS FOR PRODUCING SAME

Howard J. Rutherford, Highlands, and Donald A. Withycombe, Lincroft, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 465,313, Feb. 9, 1983, Pat. No. 4,521,541. This application Aug. 31, 1984, Ser. No. 646,019
Int. Cl.[4] B29D *27/00*
U.S. Cl. 521—79 6 Claims



1. A process for preparing a animal repellent, bird repellent and/or insect repellent containing foamed polymeric article of manufacture utilizing apparatus comprising a single screw or a twin screw extruder comprising an extruder barrel, said extruder barrel having a multiplicity of barrel segments, located within the extruder barrel, one or two parallel extruder screws, said extruder barrel having a first orifice at the location of a first extruder segment, a second orifice located at a second barrel segment at least one barrel segment downstream from said first barrel segment, and a third orifice located at a third barrel segment at least one barrel segment downstream from said second barrel segment, comprising the steps of:

(i) extruding a thermoplastic resin with a volatile bird repellent, animal repellent and/or insect repellent composition which is compatible with said thermoplastic resin, by adding said thermoplastic resin at said first orifice of said extruder and adding said bird repellent, animal repellent and/or insect repellent composition at said second orifice of said extruder, while simultaneously adding downstream from said second orifice, at said third orifice, a gaseous

blowing agent selected from the group consisting of nitrogen and carbon dioxide; and

(ii) then pelletizing the product so extruded, the temperature range in the extruder being from about 160° up to about 240° C.; the feed rate of the resin being from about 80 up to about 300 lbs. per hour into the extruder; the pressure of the gaseous blowing agent at said third orifice being from about 80 up to about 150 psig; the feed rate range of bird repellent, animal repellent and/or insect repellent composition at said second orifice being between 1 and 35 percent of the feed rate range of said resin; said thermoplastic resin being compatible with said bird repellent, animal repellent and/or insect repellent composition.

6. The product prepared according to the process of claim 1.

4,542,163

METHOD FOR THE MANUFACTURE OF POLYISOCYANURATE FOAMS

Kenneth B. White, Lisle, and William J. Largent, Darien, both of Ill., assignors to Akzona Incorporated, Enka, N.C.

Continuation-in-part of Ser. No. 519,575, Aug. 2, 1983, abandoned. This application Mar. 21, 1984, Ser. No. 592,326

The portion of the term of this patent subsequent to Jan. 10, 2001, has been disclaimed.

Int. Cl.⁴ C08G *18/14, 18/18, 18/34*

U.S. Cl. 521—105 **10 Claims**

1. A method for the manufacture of polyisocyanurate foams, comprising blending a "B" side with an "A" side, said "A" side comprising an isocyanate and said "B" side comprising a polyester polyol, an amine/quarternary ammonium borate ester blend, a surfactant, a blowing agent, and up to 20% by weight of a catalyst, based on the total weight of said "B" side, and wherein said foams have a friability not exceeding 30%.

4,542,164

FLAME-RETARDANT POLYOLEFIN FOAM

Takeshi Nishioka, Otsu; Akira Nakamura, and Kenji Yabe, both of Shiga, all of Japan, assignors to Toray Industries, Incorporated, Japan

Filed Oct. 4, 1983, Ser. No. 538,921

Claims priority, application Japan, Oct. 4, 1982, 57-173322; Oct. 19, 1982, 57-182132

Int. Cl.⁴ C08J *9/10*

U.S. Cl. 521—135 **11 Claims**

1. A flame-retardant polyolefin foam comprising at least a polyolefinic thermoplastic resin selected from the group consisting mainly of a homopolymer of α-olefin having 2 to 10 carbon atoms and copolymer of α-olefins having 2 to 10 carbon atoms; 2 to 10 percent by weight as bromine content, based on the weight of the foam, of at least a flame retardant selected from the group consisting mainly of a bisphenol A-based brominated epoxy resin and a crosslinked product thereof; and 0 to 25 percent by weight, based on the weight of the foam, of an inorganic filler.

4,542,165

POLYURETHANE BASED ON EPOXY-CONTAINING POLYMER POLYOL AND PROCESS FOR MAKING THE SAME

Koji Kumata, Yawata, and Masao Fukuda, Uji, both of Japan, assignors to Sanyo Chemical Industries, Ltd., Kyoto, Japan

Filed Aug. 16, 1984, Ser. No. 641,193

Claims priority, application Japan, Sep. 8, 1983, 58-166208; Dec. 6, 1983, 58-230842; Apr. 16, 1984, 59-76890

Int. Cl.⁴ C08G *18/14, 18/63, 18/16*; B29H *7/20*

U.S. Cl. 521—137 **33 Claims**

1. A process for producing a cellular or noncellular polyurethane having improved rigidity and heat resistance, which comprises:

reacting at least one organic polyisocyanate with a polyol component in the presence of or in the absence of a blowing agent, at least a part of the polyol component being at least one epoxy-containing polymer polyol derived from at least one polyol having an equivalent weight of 200–4,000 and at least one ethylenically unsaturated monomer comprising an epoxy radical-containing monomer; and

bringing about ring-opening reaction of the epoxy radicals, in the presence of an epoxy curing agent with or without an epoxy curing accelerator, simultaneously with, before or after the urethane-forming reaction.

27. The process of claim 1 wherein said polyisocyanate is reacted with said polyol component by conditioning them to a temperature of 25°–90° C., intimately mixing said components under a pressure of 100–200 kg/cm² g, injecting said mixture into a mold preheated to a temperature 30°–120° C., and thereafter demolding the resulting article.

4,542,166

STEERING WHEEL COMPOSED OF A NON-YELLOWING SEMI-RIGID POLYURETHANE FOAM

Akira Mabuchi, Nagoya, Japan, assignor to Toyoda Gosei Co., Ltd., Aichi, Japan

Continuation of Ser. No. 589,222, Mar. 13, 1984, abandoned. This application Jan. 23, 1985, Ser. No. 693,307

Claims priority, application Japan, Mar. 15, 1983, 58-41577

Int. Cl.⁴ C08G *18/14*

U.S. Cl. 521—176 **5 Claims**

1. A steering wheel composed of a non-yellowing, semi-rigid polyurethane foam prepared by mixing the following components with a blowing agent and a catalyst, and pouring the mixture into a mold where it is allowed to foam and cure;

(a) a polymer polyol having a molecular weight of 3,000 to 10,000 wherein a vinyl monomer is grafted to a polyether polyol;

(b) a polyol having a molecular weight of 62 to 300;

(c) an aliphatic or alicyclic isocyanate; and

(d) at least one ultraviolet absorber and at least one antioxidant.

4,542,167

DENTAL CEMENT COMPOSITION COMPRISING HYDROXYAPATITE AND ACRYLIC ACID/ITACONIC ACID COPOLYMER HARDENER

Hideki Aoki, 34-1, Morinosato, Kukisaki-cho, Inashiki-gun, Ibaraki-ken, Japan

Filed May 1, 1984, Ser. No. 606,125

Int. Cl.⁴ C08L *33/02*

U.S. Cl. 523—109 **3 Claims**

1. A water-hardenable dental cement composition comprising hydroxyapatite ($Ca_{10}(PO_4)_6(OH)_2$) as the main component and an inorganic powder and a hardening agent consisting of a copolymer of acrylic acid with itaconic acid.

4,542,168

DENTURE FIXATIVE COMPOSITION WITH PARTIALLY NEUTRALIZED AND CROSSLINKED POLYACRYLIC ACID

Tiang-Shing Chang, Westfield; Lucy J. Zientek, Bayonne, and Arthur Viningauz, Sewaren, all of N.J., assignors to Block Drug Co., Inc., Jersey City, N.J.

Division of Ser. No. 528,849, Sep. 2, 1983, Pat. No. 4,470,814, and a continuation-in-part of Ser. No. 333,019, Dec. 21, 1981, abandoned. This application Feb. 6, 1984, Ser. No. 577,018

Int. Cl.⁴ A61K *6/08*

U.S. Cl. 523—118 **11 Claims**

1. A denture fixative composition which develops when contacted with saliva a high degree of tack and viscous mucilage which spreads over the denture-mucosa interface to fill the gaps therebetween and resists the stresses of mastication, comprising a dentally acceptable excipient and an effective denture fixative amount of a combination of (a) polyacrylic acid which has been partially neutralized by at least one mono-

valent cation and partially crosslinked by at least one agent selected from the group consisting of the salts, bases and oxides of divalent cations and polyhydroxy compounds such that 20–90% of the initial carboxyl groups have been neutralized or crosslinked, wherein a 1% aqueous solution of said partially neutralized and crosslinked polyacrylic acid has a pH of at least about 4.5, or a precursor combination of polyacrylic acid, neutralizing agent and crosslinking agent or of partially neutralized polyacrylic acid and crosslinking agent or of partially crosslinked polyacrylic acid and neutralizing agent, said precursor combination adapted to form said partially neutralized and crosslinked polyacrylic acid in an aqueous environment, and (b) at least one hydrophilic polymer selected from the group consisting of guar, alginate, karaya and xanthan gums, sodium carboxymethyl cellulose, and methyl cellulose.

4,542,169

BIOMEDICAL DEVICES CONTAINING ISOTHIAZOLONES TO CONTROL BACTERIA GROWTH

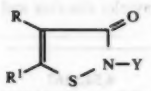
J. W. Costerton, Calgary, Canada, assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Dec. 12, 1983, Ser. No. 560,692

Int. Cl.⁴ A61M *25/00*

U.S. Cl. 523—121 **16 Claims**

1. A biomedical device selected from a skeletal joint replacement, cardiac valve, indwelling catheter, vascular prostheses, vascular access device, cardiac pacemaker, intrauterine device, intraperitoneal device or organ implant prepared from an elastomer having a Tg below 25° C. selected from natural rubber, synthetic rubber, silicone rubber, polypropylene, polyamide or polyurethane having incorporated therein or coated thereon from 0.03 to about 5 percent of an isothiazolone of the formula:



wherein Y is hydrogen, unsubstituted C_4–C_{18}alkyl, hydroxyalkyl, haloalkyl, cyanoalkyl, alkylaminoalkyl, dialkylaminoalkyl, arylaminoalkyl, carboxyalkyl, carbalkoxyalkyl, alkoxyalkyl, aryloxyalkyl, alkylthioalkyl, arylthioalkyl, haloalkoxyalkyl, cycloaminoalkyl, or carbaloxyalkyl, unsubstituted C_4–C_{18} alkenyl, haloalkenyl or unsubstituted alkynyl, haloalkynyl and unsubstituted C_3–C_{12} cycloalkyl, 3,3,5-trimethylcyclohexyl, unsubstituted aralkyl of 6–10 carbon atoms, haloaralkyl, lower alkyl aralkyl, lower alkoxyaralkyl, or unsubstituted aryl of 6–10 carbon atoms, or phenyl, naphthyl, or pyridyl substituted with one or more halo, nitro, lower alkyl, lower alkoxy, lower alkylamino, acylamino, lower carbalkoxy, or sulfonyl; R is hydrogen, halo, or C_1–C_4 alkyl; and R^1 is hydrogen, halo, or C_1–C_4 alkyl.

4,542,170

INTUMESCENT FLAME RETARDED POLYURETHANE COMPOSITIONS

Dale R. Hall, Avon Lake, and Robert L. Jackson, Fairview Park, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Jan. 22, 1985, Ser. No. 693,074

Int. Cl.⁴ C09K *3/28*

U.S. Cl. 523—179 **25 Claims**

1. An intumescent composition adapted to render thermoplastic polyurethane compositions flame retardant comprising a pentate salt of an amino-s-triazine, or a mixture thereof, and a nitrogen-containing phosphate selected from amine phosphates, ammonium phosphates, ammonium polyphosphates, and mixtures thereof.

4,542,171

THICKENERS AND BINDERS FORMING GELS IN GASOLINE

Wilhelm Elser, Griesheim; Klaus Huebner, Ober-Ramstadt; Werner Siol; Theodor Mager, both of Darmstadt, and Michael Wicke, Seeheim-Jugenheim, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Sep. 13, 1984, Ser. No. 650,089

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1983, 3333503

Int. Cl.⁴ C08F *267/06*; C08L *31/02*

U.S. Cl. 523—201 **10 Claims**

1. A powder of particles of an emulsion polymer capable of swelling and forming a gel in gasoline, said polymer comprising:

(A) at least 80 percent by weight of solid polymer of at least one alkyl ester of methacrylic acid having at least 4 carbon atoms in the alkyl or of a mixture of at least one alkyl ester of acrylic acid and at least one ester of methacrylic acid each having at least 4 carbon atoms in the alkyl,

(B) at least one crosslinking molecule,

(C) 0 to 20 percent by weight of said polymer of at least one monoolefinically unsaturated aromatic comonomer, and

(D) 0 to 10 percent of at least one monoolefinically unsaturated comonomer not soluble in gasoline at room temperature, said particles consisting of

(1) a core polymer which is from 40 to 80 percent by weight of the particle and in which crosslinking molecule (B) is from 0.1 to 2 percent, by weight of the core, of at least one monomer having at least two polymerizable olefinic carbon-carbon double bonds whose reactivity in polymerization is comparable with that of monomer (A), and of

(2) a shell polymer covering said core polymer, which is from 60 to 20 percent by weight of the particle wherein said monomer (A) is isobutyl methacrylate or cyclohexyl methacrylate and in which crosslinking molecule (B) is from 0.05 to 4 percent, by weight of the shell, of at least one graftlinking monomer having an olefinic carbon-carbon bond whose reactivity in polymerization is comparable with that of comonomers (A) and having at least one further olefinic carbon-carbon bond of lower reactivity.

4,542,172

DENTAL CEMENT CONTAINING POLYVINYL BUTYRAL AS AN ADDITIVE

Peter Jochum, Hechendorf, and Oswald Gasser, Seefeld, both of Fed. Rep. of Germany, assignors to ESPE Fabrik Pharmazeutischer Praparate GmbH, Fed. Rep. of Germany

Filed Apr. 21, 1983, Ser. No. 486,997

Claims priority, application Fed. Rep. of Germany, May 7, 1982, 3217259

Int. Cl.⁴ A61K *6/08*

U.S. Cl. 523—116 **10 Claims**

1. A preparation which on mixing forms a dental cement comprising two separate mixing components, one mixing component (a) containing at least one salicylic ester of an aliphatic alcohol; said alcohol selected from the group consisting of aliphatic monohydric alcohols, aliphatic polyhydric alcohols and mixtures thereof; and the other mixing component (b) containing calcium hydroxide, characterized in that one of the mixing components or both mixing components additionally contain a polyvinyl butyral having a degree of acetalization of at least 75%.

4,542,173

SURFACE COATING BINDERS WHICH ARE SELF-CROSSLINKING WHEN HEATED, THEIR PREPARATION AND THEIR USE

Eberhard Schupp, Schwetzingen; Werner Loch, Erpolzheim; Rolf Osterloh, Gruenstadt, and Klaas Ahlers, Muenster, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

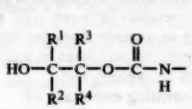
Filed Oct. 31, 1983, Ser. No. 547,091

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1983, 3311517

Int. Cl.[4] C08L *63/02*

U.S. Cl. 523—414 5 Claims

1. A surface coating binder which is self-crosslinking when heated and is based on synthetic polyadducts, polycondensates or polymers, wherein the binder has a mean molecular weight $\overline{M}_n$ of from 500 to 10,000 and contains, on average per molecule, at least two groups of the formula I



(I)

wherein R^1, R^2, R^3 and R^4 are identical or different and are each hydrogen or a methyl or an ethyl radical, and additionally contain hydroxyl groups, primary amino groups, secondary amino groups or tertiary amino groups or a combination of 2 or more of said hydroxyl, primary amino, secondary amino and tertiary amino groups.

4,542,174

ORGANOSILICON/OXIRANE ADDITIVES FOR FILLED CONDENSATION POLYMER COMPOSITES

Robert E. Godlewski, Mahopac, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 14, 1984, Ser. No. 589,470

Int. Cl.[4] C08K *5/16, 5/54*

U.S. Cl. 523—508 32 Claims

1. An organosilicon/oxirane composition comprising from 5 to 95 weight percent of an oxirane compound and from 95 to 5 weight percent of organosilicon selected from the group of an acylamino and cyano silanes and combinations thereof, wherein the oxirane compound is an epoxy resin.

4,542,175

METHOD FOR THICKENING AQUEOUS SYSTEMS

Herbert Fink, Bickenbach; Klaus Huebner; Gerhard Markert, both of Ober-Ramstadt-Eiche, and Norbert Suetterlin, Ober-Ramstadt, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 329,765, Dec. 11, 1981, abandoned, which is a continuation-in-part of Ser. No. 177,587, Aug. 13, 1980, abandoned. This application Aug. 12, 1983, Ser. No. 522,524

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1979, 2934086; Dec. 24, 1980, 3049178

Int. Cl.[4] C08J *3/06*

U.S. Cl. 524—516 15 Claims

1. The method of thickening an aqueous system, which method comprises mixing the aqueous system with an aqueous dispersion, different from said aqueous system, of particles of a synthetic copolymer, free of acid groups, comprising

(A) 20–100 percent by weight of a basic unsaturated free radically polymerizable monomer having a pK_b-value from 3 to 6 and at least one basic nitrogen atom,

(B) 0–95 percent by weight of a neutral unsaturated free radically polymerizable comonomer which has at most limited solubility in water, and

(C) 0–30 percent by weight of a neutral unsaturated free radically polymerizable comonomer which is water soluble,

said polymer having a molecular weight of at least 500,000 and being water soluble at a pH value below 7, said mixture of the aqueous system and aqueous dispersion having a pH value below 7, whereby said copolymer is present therein in a dissolved state.

4,542,176

PREPARATION OF PARTICULATE GELS

Neil B. Graham, Bearsden, Scotland, assignor to National Research Development Corporation, London, England

Continuation of Ser. No. 387,775, Jun. 14, 1982, abandoned. This application Nov. 5, 1984, Ser. No. 667,403

Claims priority, application United Kingdom, Jun. 12, 1981, 8118087

Int. Cl.[4] C08J *3/08*

U.S. Cl. 524—543 11 Claims

1. A process for the preparation of a particulate hydrogel of a homo-or copolymer which can exhibit syneresis, which process comprises:

(i) contacting the hydrogel with a swelling agent;

(ii) subjecting the swollen hydrogel to shear stress such that the swollen hydrogel is comminuted to particles; and

(iii) drying the swollen particulate hydrogel by varying its temperature so that it exhibits syneresis.

4,542,177

THERMOPLASTIC POLYESTER MOLDING COMPOSITION HAVING AN IMPROVED IMPACT PERFORMANCE

George R. Kriek, Bethal Park; James Y. J. Chung, Pittsburgh; Gerard E. Reinert, and Dieter Neuray, both of Pittsburgh, all of Pa., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Jun. 29, 1984, Ser. No. 626,074

Int. Cl.[4] C08K *7/14, 3/40*

U.S. Cl. 524—98 11 Claims

1. A thermoplastic molding composition comprising a blend of

(i) polyethylene terephthalate,

(ii) a reinforcing amount of a reinforcing agent of said polyethylene terephthalate and

(iii) about 0.5 to about 8.0 parts per hundred weight of said polyethylene terephthalate of an end-capped polyisocyanate prepolymer.

4,542,178

PLASTICIZER-CONTAINING POLYVINYL ALCOHOL GRANULES

Wolfgang Zimmermann, and Albrecht Harréus, both of Kelkheim, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 343,114, Jan. 27, 1982, which is a division of Ser. No. 211,627, Dec. 1, 1980, Pat. No. 4,323,492, which is a continuation of Ser. No. 22,869, Mar. 21, 1979, abandoned. This application Dec. 2, 1983, Ser. No. 558,546

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1978, 2812684; Sep. 22, 1978, 2841238

Int. Cl.[4] C08L *29/04, 31/04;* C08K *5/05, 5/06*

U.S. Cl. 524—388 17 Claims

1. A plasticizer-containing, pourable and tack-free granular polyvinyl alcohol composition comprising polyvinyl alcohol, at least 90% of the plasticized polyvinyl alcohol granules being from 0.8 to 4 mm in diameter; a plasticizer homogeneously distributed therein, the plasticizer being present in an amount of 10 to 30% by weight relative to the unplasticized polyvinyl alcohol granules; and further containing, distributed homogeneously therein, a fine particle high molecular weight organic compound, in an amount of 2 to 12% by weight relative to the unplasticized polyvinyl alcohol granules, which is soluble or dispersible in water.

4,542,179

ACRYLIC SEQUENTIAL GRAFT COPOLYMER-STYRENE-ACRYLONITRILE COPOLYMER BLENDS

John C. Falk, Northbrook, and Leland B. Kliever, Naperville, both of Ill., assignors to Borg-Warner Chemicals, Inc., Parkersburg, W. Va.

Filed Sep. 24, 1984, Ser. No. 653,631
Int. Cl.[4] C08K *3/20;* C08L *25/12, 51/00*
U.S. Cl. 524—432 9 Claims

1. A thermoplastic composition comprising a blend of 100 parts by weight of an acrylic sequential graft copolymer and from 5 to 35 parts by weight of a copolymer comprising 90 to 50 wt% styrene and 10 to 50 wt% acrylonitrile, wherein said acrylic sequential graft copolymer has a core-shell structure and consists of:

(a) from 10 to 100 parts by weight of a rigid monomer mixture comprising from 99.9 to 95 wt% of at least one rigid monovinylic monomer and from 0.1 to 5 wt% of a first copolymerizable functional monomer, and 100 parts by weight of a rubbery monomer mixture comprising from 99.9 to 95 wt% of at least one rubbery acrylic monomer and from 0.1 to 5 wt% of a second copolymerizable functional monomer interractive with said first functional monomer; and

(b) said core-shell structure consists of from 10 to 40 wt% of a rigid polymeric core formed of said rigid monomer mixture, from 10 to 50 wt% of rubbery polymeric shell formed of said rubbery monomer mixture and surrounding and at least partially encapsulating said rigid polymeric core, and from 20 to 80 wt% of a copolymeric transition layer intermediate between said core and said shell and formed of said rigid monomer mixture and said rubbery monomer mixture.

9. The composition of claim 1 comprising from 5 to 20 parts by weight of said styrene-acrylonitrile copolymer and from 0.1 to 1 wt%, based on total thermoplastic composition, of zinc oxide.

4,542,180

COMPOSITE LOW TEMPERATURE CURE LATEXES

Gary M. Carlson, North Olmsted, and Frank A. Wickert, Olmsted Township, Cuyahoga County, both of Ohio, assignors to SCM Corporation, New York, N.Y.

Filed Oct. 1, 1984, Ser. No. 656,509
Int. Cl.[4] C08L *61/24*
U.S. Cl. 524—512 4 Claims

1. In a process for providing a polymeric composition comprising glycoluril and reactive copolymer the process steps comprising:

providing an aqueous dispersion of glycoluril derivative dispersed into water, and copolymerizing ethylenically unsaturated monomers in the presence of the aqueous dispersion of glycoluril derivative to provide an in-situ formed emulsion polymer mixture of glycoluril derivative and reactive matrix copolymer of copolymerized monomers, said emulsion polymer mixture containing on a solids weight basis between 5% and 55% glycoluril derivative, and said monomers comprising between 0.5% and 10% carboxyl monomer and between 2% and 20% hydroxyl monomer with the balance being other ethylenically unsaturated monomers including acrylamide monomers.

4,542,181

LATICES OF VINYL ACETATE POLYMERS

Jean-Luc Schuppiser, Claye Souilly, and Jean-Claude Daniel, Fontenay-sous-Bois, both of France, assignors to Rhone-Poulenc Specialties Chimiques, France

Filed Aug. 5, 1982, Ser. No. 405,432
Claims priority, application France, Aug. 10, 1981, 81 15438
Int. Cl.[4] C08F *18/08*
U.S. Cl. 524—560 4 Claims

1. A latex of vinyl acetate polymer comprising:

particles of a vinyl acetate polymer, said polymer being selected from the group consisting of at least one homopolymer of vinyl acetate and at least one copolymer of vinyl acetate with at least one other copolymerizable monomer selected from the group consisting of vinyl esters of branched or unbranched, saturated monocarboxylic acids (C_1–C_{12}), and alkyl (C_1–C_{10}) esters of unsaturated monocarboxylic or dicarboxylic acids (C_3–C_6), said polymer having a glass transition temperature between −20° and 50° C., and said particles having an average diameter between 0.05 and 1 μm and being present in said latex at a concentration of between 10 and 70% by weight; and

a protective colloid consisting essentially of:

a water-soluble polymer (a) containing at least one monomer selected from the group consisting of N-methylolacrylamide and N-methylolmethacrylamide and

a water-soluble polymer (b) of ethylene glycol, said polymer (b) having a molecular weight between 1,000 and 50,000,

said latex having a first viscosity at acid pH, said first viscosity being lower than a second viscosity obtained when the pH of said latex is made alkaline and wherein said second viscosity remains invariable irrespective of subsequent change in the pH of the latex.

4,542,182

LATICES OF VINYL ACETATE/OLEFIN COPOLYMERS

Jean-Luc Schuppiser, Claye Souilly, and Jean-Claude Daniel, Fontenay-Sous-Bois, both of France, assignors to Rhone-Poulenc Specialties Chimiques, France

Filed Aug. 5, 1982, Ser. No. 405,599
Claims priority, application France, Oct. 8, 1981, 81 15439
Int. Cl.[4] C08F *18/08*
U.S. Cl. 524—563 6 Claims

1. A latex of a vinyl acetate/olefin copolymer comprising:

particles of a vinyl acetate/olefin copolymer, said copolymer having a glass transition temperature between −30° and 50° C. and said particles being present in said latex in a concentration between 10 and 70% by weight and having an average diameter between 0.05 and 1 μm; and

a protective colloid, said colloid consisting essentially of

a water-soluble polymer (a) containing at least one monomer selected from the group consisting of N-methylolacrylamide and N-methylolmethacrylamide and

a water-soluble polymer (b) of ethylene glycol, said polymer having a molecular weight between 1,000 and 50,000,

said latex having a first viscosity at acid pH, said first viscosity being lower than a second viscosity obtained when the pH of said latex is made alkaline and wherein said second viscosity remains invariable irrespective of subsequent changes in the pH of said latex.

4,542,183

FATIGUE CRACK GROWTH RETARDANT MATERIAL

Robert N. Miller, Acworth, and Richard L. Smith, Atlanta, both of Ga., assignors to Lockheed Corporation, Burbank, Calif.

Filed Apr. 1, 1983, Ser. No. 481,402

The portion of the term of this patent subsequent to Apr. 27, 1999, has been disclaimed.

Int. Cl.[4] C08K 5/16; C08L 63/00, 81/04

U.S. Cl. 524—714 3 Claims

1. A fatigue crack growth retardant material for application to aluminum and alloys thereof comprising:

(a) an amine compound comprising the reaction product of hexafluoroisopropanol and cyclohexylamine mixed in a 1 to 1 molar ratio; and

(b) a polysulfide elastomeric polymer compatible with said compound with respect to the curing properties of said polymer as well as the ultimate properties of said material and capable of stabilizing said compound so as to inhibit the evaportion thereof to the atmosphere, said reaction product being mixed with said polysulfide elastomeric polymer in a concentration of about 5% by weight;

whereby said material inhibits corrosion of and retards crack growth in aluminum and alloys thereof when applied thereto.

2. The material of claim 1, wherein said polysulfide is mixed with a solvent whereby said material is applied as a coating.

3. The material of claim 1, wherein said polysulfide is prepared for application as a sealant.

4,542,184

PROCESS FOR AQUEOUS POLYMER DISPERSION BY POLYMERIZING UNSATURATED ETHYLENIC COMPOUNDS

Herbert Eck, and Reinhard Jira, both of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Fed. Rep. of Germany

Filed Jun. 28, 1984, Ser. No. 625,668

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1983, 3323810

Int. Cl.[4] C08F 2/20, 4/32, 4/40; C08J 3/06

U.S. Cl. 524—827 12 Claims

1. A process for the preparation of aqueous polymer dispersions consisting essentially of polymerizing compounds with unsaturated ethylenic bonds at a temperature of 10 to 100° C. in the presence of an at least partially water-soluble free-radical initiator and at least one water-soluble protein with the starting mixture containing not more than 40% of the total monomers and the remaining monomer being added by metering during the polymerization, the initiators being at least one member of the group consisting of ketone peroxides and organic hydroperoxides in an amount of at least 30 mmol per kg of total monomer mixture and the amount of protein being at least 3% up to 50% by weight based on the total monomer weight and at least 30% by weight of the total amount of protein is added during the polymerization and the isoelectric point of the protein is not reached or exceeded during polymerization.

4,542,185

GRAFT COPOLYMERS OF ALKYL METHACRYLATES—ALKYL ACRYLATES ONTO DIENE—ALKYL ACRYLATE COPOLYMERS AND THEIR USE AS IMPACT MODIFIERS

Gilles Meunier, Lescar, France, assignor to M&T Chemicals Inc., Woodbridge, N.J.

Filed Jun. 22, 1984, Ser. No. 623,756

Claims priority, application France, Aug. 31, 1983, 83 13997

Int. Cl.[4] C08L 51/00

U.S. Cl. 525—70 39 Claims

1. A synthetic resin composition having improved impact strength which comprises

(a) a thermoplastic polymer

(b) from 0.5 to 50 parts by weight per 100 parts by weight of thermoplastic polymer of a graft copolymer impact additive which comprises

(i) a backbone consisting essentially of a statistical copolymer of butadiene or isoprene with an alkyl acrylate of C_2 to C_{12} alkyl, wherein the butadiene or isoprene represents from about 0.5 to about 35% of the weight of the backbone;

(ii) a copolymer grafted onto said backbone, said grafted copolymer consisting essentially of a statistical copolymer of C_1–C_4 alkyl methacrylate with a C_1–C_8 alkyl acrylate, said alkyl acrylate comprising a molar proportion of from 5 to 50%, said grafted copolymer representing from 10 to 200% of the weight of the backbone.

4,542,186

PROCESS FOR THE PREPARATION OF REINFORCED RUBBER VULCANISATES AND THE USE THEREOF

Arnold Giller, Taunusstein, and Joachim Weil, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 13, 1981, Ser. No. 243,384

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1980, 3010001

Int. Cl.[4] C08L 7/00, 9/00

U.S. Cl. 525—138 10 Claims

1. In a process for the preparation of reinforced vulcanizates by vulcanization of compositions comprising natural rubber or synthetic diene rubber with novolak resins in the presence of sulfur as a vulcanizing agent in conjunction with a known acelerator and of from 2 to 120% by weight, based on the novolak resin, of a hardener for the novolak resin being an aminoplast forming compound containing hydroxyl groups other than a reactive melamine resin obtained by reacting one mole of melamine with 0.5 to 6 moles of an aldehyde or a mixture of such other aminoplast with said reactive melamine resin obtained by reacting 1 mol of melamine with 0.5 to 6 mols of an aldehyde, the novolak resin being present in the final composition in an amount of from 1 to 30% by weight based on the rubber, and the phenolic component of said novolak resin being selected from the group consisting of phenol, bisphenols, alkylphenols having one alkyl group with 2 to 12 carbon atoms, a combination of alkylphenols with phenol, and a combination of at least one of said phenols with a further phenol selected from the group consisting of resorcinol, phenylphenol and poly-alkylphenols, said further phenols being employed in such a quantity that the molar ratio of the total quantity of the further phenols to the total quantity of the other phenols is not more than 1:2.

4,542,187

POLYARYLATE RESIN CONTAINING COMPOSITION AND METHOD

Barry D. Dean, Broomall, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed May 14, 1984, Ser. No. 610,065

Int. Cl.[4] C08L 67/02, 25/18, 33/24

U.S. Cl. 525—132 18 Claims

1. A moldable polymer composition comprising from about 99.5 to about 1% by weight of a polyarylate resin derived from a dihydric phenol and a mixture of isophthalic acid and terephthalic acid and from about 0.5 to about 99% by weight of a copolymer containing from about 50 to about 60 mole % recurring units of a vinyl aromatic monomer and from about 40 to about 50 mole % recurring units of a maleimide monomer, said copolymer being thermodynamically miscible with said polyarylate resin.

4,542,188

POLYMERIC FILMS HAVING ONE-SIDED CLING AND COMPOSITIONS USEFUL IN THEIR PREPARATION

Lambertus P. P. M. van der Heijden, Terneuzen, Netherlands, assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 25, 1981, Ser. No. 325,080
Int. Cl.[4] C08L *23/06, 23/20, 23/16*
U.S. Cl. 525—240 12 Claims

1. A polymeric blend comprising from about 65 to about 80 weight percent of a low density homopolymer of ethylene, from about 20 to about 35 weight percent of a linear low density ethylene copolymer of ethylene and an α-olefin of 3 or more carbon atoms and from about 2 to 10 weight percent of a polyisobutylene or atactic polypropylene tackifying agent, said weight percents being based on the total weight of the ethylene polymers and tackifying agent, wherein, within the foregoing compositional limitations, the tackifying agent is employed in an amount and the linear low density ethylene copolymer has a sufficiently higher crystallinity than the low density polyethylene such that a film having preferential one-sided cling can be prepared from the blend without corona discharge treatment of the film.

4,542,189

PROCESS FOR THE PREPARATION OF NOVEL RUBBER-MODIFIED THERMOPLASTIC RESIN COMPOSITIONS USING MULTIPLE FEED STREAMS

Christopher L. Bodolus, Cleveland, and David A. Woodhead, Bainbridge, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Sep. 26, 1983, Ser. No. 535,726
Int. Cl.[4] C08F *279/02, 255/06, 283/06*
U.S. Cl. 525—285 9 Claims

1. A process for the preparation of novel rubber modified thermoplastic resin compositions in a single reactor, capable of intimately mixing multiple immiscible phases, comprising the steps of:

dissolving a rubber polymer in a monomer selected from the group consisting of monovinyl aromatic monomers, olefinically unsaturated nitriles and mixtures thereof to form a feed solution;

introducing said feed solution into a single reactor;

simultaneously introducing into said reactor a separate liquid monomer feed stream said monomers being selected from the group consisting of unsaturated dicarboxylic acid anhydrides, olefinically unsaturated nitriles and mixtures thereof;

heating said feed solution and feed stream in the absence of solvents other than said monomers and under pressure of from about 0.1 to 2.0 MPa to a temperature of from about 25° C. to 175° C. sufficient for polymerization to begin; and

intimately mixing and polymerizing said monomers around said rubber polymer in said reactor at a temperature of from about 149° C. to 210° C. and under a pressure of from about 2.0 to 5.2 MPa to form a thermoplastic resin composition.

4,542,190

CIS-1,4-POLYISOPRENE RUBBER COMPOSITION

Shizuo Kitahara, Kawaguchi; Toshihiro Fujii, and Nagatoshi Sugi, both of Yokohama, all of Japan, assignors to Nippon Zeon Co Ltd, Tokyo, Japan

Filed Jun. 22, 1982, Ser. No. 390,931
Claims priority, application Japan, Jun. 29, 1981, 56-100993
Int. Cl.[4] C08C *19/40, 19/20, 19/22*
U.S. Cl. 525—332.6 5 Claims

1. A cis-1,4-polyisoprene rubber composition capable of giving a vulcanizate having improved strength, said composition comprising (1) an epoxidized synthetic cis-1,4-polyisoprene rubber having 0.02 to 1.5 epoxy groups per 100 isoprene monomer units, (2) 0.05 to 3.0 parts by weight of a compound having at least two primary amino groups per 100 parts by weight of the rubber (1), and (3) a sulfur vulcanization system comprised of at least one of sulfur and sulfur-donor compounds.

4,542,191

RUBBER ADDITIVES DERIVED FROM GUAYULE RESINS AND COMPOSITIONS CONTAINING THEM

Edward L. Kay, Akron, and Richard Gutierrez, Canal Fulton, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 298,447, Sep. 1, 1981, Pat. No. 4,435,337, and a continuation-in-part of Ser. No. 263,387, May 13, 1981, abandoned, and a continuation-in-part of Ser. No. 149,862, May 14, 1980, abandoned. This application Oct. 19, 1981, Ser. No. 312,197
Int. Cl.[4] C08F *19/00*
U.S. Cl. 525—383 6 Claims

1. A tackifying and green strength improving agent for rubber comprising of at least one chemically treated guayule resin fraction.

4,542,192

REACTIVE HARDENABLE POLYMER MIXTURE AND PROCESS FOR THE PREPARATION OF HARDENED PRODUCTS THEREFROM

Kurt Kraft; Gerd Walz, both of Wiesbaden, and Thaddäus Wirth, Heidenrod, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

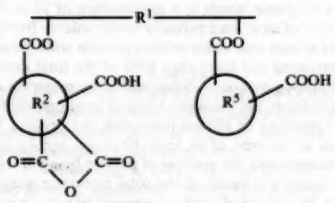
Continuation of Ser. No. 150,706, May 19, 1980, abandoned, which is a continuation of Ser. No. 961,556, Nov. 17, 1978, abandoned. This application May 26, 1982, Ser. No. 382,419
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1977, 2754399; Mar. 18, 1978, 2811914
Int. Cl.[4] C08G *85/00*; C08L *63/00*
U.S. Cl. 525—438 16 Claims

1. A reactive hardenable polymer mixture which comprises:

(A) at least one aliphatic epoxy compound having 2 to 6 oxirane groups; and

(B) at least one polycarboxylic acid compound in the form of a component selected from the group consisting of:

(a) at least one compound of Formula I:



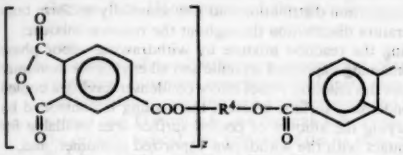
(I)

wherein:

R^1 is a radical derived from at least one polymeric product containing hydroxy groups arranged along the backbone which product is selected from the group consisting of a polymerization and a condensation product and a combination thereof in the form of polyesters having a hydroxy number between 40 and 220, a polymer having a hydroxy number between 40 and 220 selected from the group consisting of a polymerization product of polyvinyl alcohol and, at least partially saponified copolymers of vinylacetate with at least one unsaturated monomer, a homopolymer of hydroxyalkylacrylate, methacrylate or maleinate and a copolymer of at least one of said hydroxyalkyl monomers with at least one olefinically unsaturated monomer; phenol resins having a hydroxy number between 150 and 300 and combinations thereof;

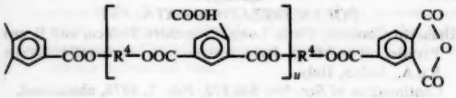
R^2 is derived from a radical selected from the group consisting of those of formula IIa and formula VI

(IIa)



in which z is an integer from 1 to 4 inclusive:

(VI)



in which u is an integer from 1 to 8, inclusive, or the corresponding free acids;

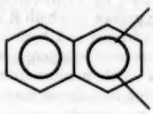
wherein the bridging radical

R^4 is (a) a bi- to pentavalent radical selected from the group consisting of an aliphatic hydrocarbon group having 1 to 28 carbon atoms, (b) radical (a) being at least once interrupted by oxygen-bridges or by —HC=CH—group, and (c) a radical (a) being substituted by an ester group having 1 to 6 carbon atoms, (d) a radical (a) being substituted by a COOH—group, (e) an aromatic group having 6 to 43 carbon atoms of at least one of formulae

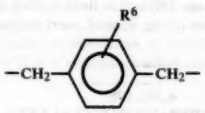
(XVI)

(XVII)

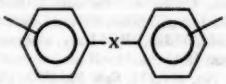
(XVIII)



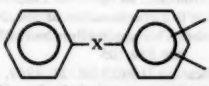
(XIX)



(XX)



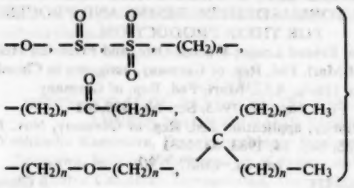
(XXI)



the aromatic radicals being unsubstituted or substituted by at least one radical R^6 selected from the group consisting of alkyl, alkoxy each having 1 to 6 carbon atoms and halogen, furthermore R^4 is (f) a piperazine group, wherein in formulae XX and XXI the divalent radical

X is a group of one of formulae

(XXII)



wherein n is an integer from 1 to 8; R^5 is a radical of an at least dibasic cyclic carboxylic acid having at least one COOH—group in an ortho-position to the ester bond and R^5 may also be as defined for R^2;

(b) at least one compound of formulae (IIa) or (VI) together with at least one of the OH—group containing compounds from which the above defined group R^1 is derived;

(c) at least one compound corresponding to formula (I) as defined under (a) but with the proviso that the anhydride groups are replaced at least partially by a free acid or ester group or by both;

(d) at least one compound as defined under (b) wherein the anhydride groups of the polycarboxylic acid compounds are replaced at least partially by a free acid or at least partially by an ester group or by both; and

(e) any combination of (a) to (d).

4,542,193

CATHODIC ELECTROCOATING BINDERS

Eberhard Schupp, Schwetzingen; Werner Loch, Erpolzheim; Rolf Osterloh, Gruenstadt, and Klaas Ahlers, Muenster, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 31, 1983, Ser. No. 547,085

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1983, 3311512

Int. Cl.[4] C08L *61/14*

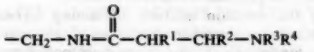
U.S. Cl. 525—490 **3 Claims**

1. A binder which is water-dilutable on addition of acid, is suitable for preparing cathodic electrocoating compositions and comprises a mixture of

(A) from 60 to 95% by weight of a polyadduct which carries basic nitrogen groups and contains groupings of the formula (I) or (II) or (I) and (II)

(I)

(II)



where R^1 and R^2 are identical or different and each is hydrogen or methyl, and R^3 and R^4 are identical or different and each is alkyl of 1 to 9 carbon atoms or hydroxyalkyl of 2 to 10 carbon atoms, or R^3 and R^4 together are a 5- or 6-membered ring and

(B) from 5 to 40% by weight of a reaction product of a polyisocyanate and an olefinically unsaturated amine which carries a secondary amino group and a methacrylamide or methacrylate group.

4,542,194

NAPHTHA-SOLUBLE, HYDROGENATED ALKYL ARYL KETONE/FORMALDEHYDE RESINS AND PROCESS FOR THEIR PRODUCTION

Jörg Dörffel; Erhard Lange; Werner Otte, and Friedrich Heinrich, all of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Huels, A.G., Marl, Fed. Rep. of Germany

Filed Nov. 10, 1983, Ser. No. 550,461

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1982, 3241735; Sep. 24, 1983, 3334631

Int. Cl.[4] C08G *2/30*

U.S. Cl. 525—521 8 Claims

1. A naphtha-soluble, hydrogenated C_{1-4}alkyl C_{6-10}-aryl ketone/formaldehyde resin, having an oxygen content of at least 6% by weight and a softening point of at least 70° C.

4,542,195

METHOD FOR PREVENTING POLYMER SCALE DEPOSITION IN THE POLYMERIZATION OF AN ETHYLENICALLY UNSATURATED MONOMER

Toshihide Shimizu, Chiba; Ichiro Kaneko, and Yoshiteru Shimakura, both of Ibaraki, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Sep. 28, 1984, Ser. No. 656,169

Claims priority, application Japan, Sep. 30, 1983, 58-182587

Int. Cl.[4] C08F *6/2, 14/02*

U.S. Cl. 526—62 4 Claims

1. In a method for preventing deposition of polymer scale on the walls of a polymerization reactor in the polymerization of an ethylenically unsaturated monomer which comprises:

(i) coating the walls of the polymerization reactor prior to the introduction of the polymerization mixture with a coating composition comprising

(a) a condensation product of an aromatic amine compound and an aromatic nitro compound and

(b) an alkali metal or ammonium salt of a sulfonation product of a condensation product of an aromatic amine compound and an aromatic nitro compound, dissolved in a solvent;

(ii) drying the thus coated walls of the polymerization reactor;

(iii) polymerizing said monomer in the presence of a monomer-soluable organic peroxide having a relatively high solubility in water of at least 0.2% by weight of 20° C. as the polymerization initiator.

4,542,196

PROCESS FOR PRODUCING STYRENIC/ALKENYLNITRILE COPOLYMERS

Jeffrey D. Morris, and Robert A. Fuller, both of Big Spring, Tex., assignors to Cosden Technology, Inc., Dallas, Tex.

Filed Sep. 24, 1982, Ser. No. 423,489

Int. Cl.[4] C08F *212/10*

U.S. Cl. 526—64 28 Claims

1. A process for the continuous mass polymerization of styrenic and alkenylnitrile monomers to produce a styrenic-/alkenylnitrile copolymers, comprising the steps of:

continuously introducing a feed comprising a predetermined ratio of styrenic and alkenylnitrile monomers into a reaction vessel to produce a reaction mixture;

subjecting the reaction mixture containing styrenic and alkenylnitrile monomers to conditions of temperature and pressure under which said monomers copolymerize to produce a styrenic/alkenylnitrile copolymers;

subjecting the reaction mixture to horizontal agitation by rotationally agitating the reaction mixture within the reaction vessel by means of at least one stirring device;

subjecting the reaction mixture to vertical agitation by withdrawing a portion of the reaction mixture from a position near the bottom of the reaction vessel, circulating the withdrawn portion in at least one closed external loop directly connected from the bottom to the top of the reaction vessel and reintroducing the withdrawn portion at a position near the top of the reaction vessel, said agitation being sufficient to maintain a substantially uniform composition distribution and a substantially uniform temperature distribution throughout the reaction mixture;

cooling the reaction mixture by withdrawing vapor phase containing vaporized styrenic and alkenylnitrile monomer from the reaction vessel into a condenser having a cooled condensing surface wherein the cooling is controlled by varying the amount of cooled surface area available for contact with the withdrawn vaporized monomer; and,

continuously withdrawing styrenic/alkenylnitrile copolymer from the reaction vessel.

4,542,197

POLYMERIZATION CATALYST

Umberto Giannini; Paolo Longi; Domenico Deluca, and Bruno Pivotto, all of Milan, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Continuation of Ser. No. 548,172, Feb. 7, 1975, abandoned, which is a continuation of Ser. No. 329,430, Feb. 5, 1973, abandoned, which is a continuation of Ser. No. 49,181, Jun. 23, 1970, abandoned. This application Nov. 18, 1983, Ser. No. 553,060

Claims priority, application Italy, Jun. 24, 1969, 18597 A/69

The portion of the term of this patent subsequent to Nov. 3, 1998, has been disclaimed.

Int. Cl.[4] C08F *4/02, 10/02*

U.S. Cl. 526—125 23 Claims

1. A catalyst for polymerizing olefins and prepared by mixing

(a) a catalyst-forming component which is a hydride or an organo-metallic compound of a metal belonging to Groups I to III inclusive of the Mendelyeev Periodic Table

with

(b) a supported catalyst-forming component obtained by contacting a titanium compound having the general formula

$$M_pTi_mX_{(n.m)+p}$$

in which n is the titanium valence, M is selected from the group consisting of alkaline metals, the ammonium radical and the ammonium radical substituted by hydrocarbon radicals, the $X_{(n.m)}$ substituents are NR_2 groups in which R is selected from the group consisting of hydrogen and hydrocarbon radicals and some of the Xs may represent halogen; p is a whole number from 0 to 3; and m is a whole number from 1 to 3; with a support comprising an active anhydrous magnesium dihalide characterized in that the X-rays powder spectrum thereof does not show the most intense diffraction lines as they appear in the X-rays powder spectrum of the normal, inert magnesium dihalide.

4,542,198

POLYMERIZATION CATALYSTS

Adolfo Mayr, Ferrara; Umberto Giannini, Milan; Ermanno Susa, Ferrara; Paolo Longi, Milan; Ettore Giachetti, Milan, and Domenico DeLuca, Milan, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Continuation of Ser. No. 397,111, Sep. 13, 1973, abandoned, which is a continuation-in-part of Ser. No. 248,597, Apr. 28, 1972, abandoned, which is a continuation of Ser. No. 22,011, Mar. 23, 1970, abandoned. This application Nov. 23, 1983, Ser. No. 554,705

Claims priority, application Italy, Mar. 24, 1969, 14473 A/69

The portion of the term of this patent subsequent to Nov. 3, 1998, has been disclaimed.

Int. Cl.[4] C08F *4/02, 10/02*

U.S. Cl. 526—125 12 Claims

1. Highly active catalysts for the polymerization of olefins and obtained by mixing

(a) a catalyst-forming component which is a hydride or organo-metallic compound of a metal belonging to one of Groups I to III inclusive of the Mendelyeev Periodic Table
with
(b) a supported catalyst-forming component obtained by contacting a titanium compound containing organic radicals bound to oxygen through a carbon atom and in which at least one Ti atom is bound through the oxygen atom to the organic radical, any valency of the Ti atom not satisfied by organic radicals bound to oxygen through the carbon atom being satisfied by halogen, with a carrier comprising an anhydrous magnesium dihalide in an active form characterized in that its X-ray powder spectrum does not show the most intense diffraction line as it appears in the X-ray powder spectrum of the normal, non-active magnesium dihalide, the spectrum of the active magnesium dihalide showing a broadening of said most intense diffraction line.

4,542,199

PROCESS FOR THE PREPARATION OF POLYOLEFINS

Walter Kaminsky, Pinneberg; Heinrich Hähnsen, Delingsdorf; Klaus Küipers, Hamburg, and Rüdiger Woldt, Lüneburg, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 396,038, Jul. 7, 1982, abandoned. This application Dec. 8, 1983, Ser. No. 559,838

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1981, 3127133

Int. Cl.[4] C08F *4/64, 10/00*

U.S. Cl. 526—160 **8 Claims**

1. A process for the preparation of a polyolefin by polymerizing an olefin of the formula CH_2CHR in which R=H or C_1–C_{10} alkyl, on its own or as a mixture, with other olefins or with C_4–C_{12} α,ω-diolefins, in solvents, liquid monomers or the gas phase, at temperatures between −50° and 200° C., using a soluble, halogen-containing transition metal compound and aluminoxanes, which comprises carrying out the polymerization in the presence of a catalyst system composed of the following components:

(a) bis-(cyclopentadienyl)-zirconium dichloride or bis-(cyclopentadienyl-zirconium monomethyl monochloride, and

(b) a compound, containing aluminum, of the aluminoxane type having the general formulae

$$Al_2OR_4(Al(R)—O)_n$$

for a linear aluminoxane and

$$(Al(R)—O)_{n+2}$$

for a cyclic aluminoxane, in which n is a number from 4 to 20 and R is a methyl or ethyl radical.

4,542,200

POLYACRYLAMIDE CROSS-LINKED WITH A POLYSACCHARIDE RESIN AS ELECTROPHORETIC GEL MEDIUM

Samuel Nochumson, Rockland, Me., assignor to FMC Corporation, Philadelphia, Pa.

Division of Ser. No. 542,795, Oct. 17, 1983, Pat. No. 4,504,641, which is a continuation-in-part of Ser. No. 350,446, Feb. 19, 1982, abandoned. This application Nov. 30, 1984, Ser. No. 677,101

Int. Cl.[4] C08L *5/02;* **C08B** *37/12*

U.S. Cl. 526—238.2 **2 Claims**

1. A polyacrylamide film, bearing an electrophoretic pattern, said film comprising polyacrylamide cross-linked with a polysaccharide resin having a weight average molecular weight of from about 5000 to about 10^6 daltons and wherein there has been substituted for at least some of the hydroxyl hydrogens in said resin an ethylenically unsaturated group of from 2 to 12 carbon atoms capable of cross-linking with acrylamide in the presence of a catalyst to form said cross-linked polyacrylamide.

4,542,201

RESIN FOR HIGH-REFRACTIVITY LENSES AND LENSES MADE OF SAME RESIN

Yoshinobu Kanemura, Kamakura; Masao Imai, and Katsuyoshi Sasagawa, both of Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals Incorporated, Tokyo, Japan

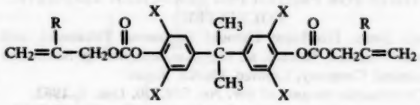
Filed Nov. 6, 1984, Ser. No. 668,884

Claims priority, application Japan, Nov. 11, 1983, 58-212177

Int. Cl.[4] C08F *218/00*

U.S. Cl. 526—314 **2 Claims**

1. A resin for high-refractivity lenses, formed by polymerizing at least one carbonate compound represented by the general formula (I):

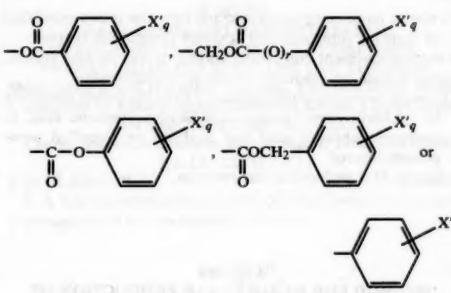


(I)

wherein X is a hydrogen, chlorine or bromine atom, and R is a hydrogen atom or a methyl group with at least one unifunctional monomer represented by the general formula (II):

(II)

wherein R′ is a hydrogen atom or a methyl group and Y represents



wherein X′ is a chlorine or bromine atom, q is an integer of 0–5, and r is 0 or 1.

4,542,202

LATENT CURING AGENTS FOR EPOXY RESINS

Koji Takeuchi, Yokohama; Masahiro Abe, Kawasaki; Nobuo Ito, Oisomachi, and Kiyomiki Hirai, Kawasaki, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Sep. 16, 1983, Ser. No. 532,901

Claims priority, application Japan, Sep. 21, 1982, 57-164557; Jun. 22, 1983, 58-112232

Int. Cl.[4] C08G *59/52, 59/64, 59/66*

U.S. Cl. 528—96 **16 Claims**

1. A latent curing agent for epoxy resins which comprises an addition product obtained by reacting (a) a polyfunctional epoxy compound and (b) a compound having at least one functional group of OH group, SH group and $CONHNH_2$

group together with a tertiary amino group in the molecule in a ratio of 0.8 to 2.5 equivalent of epoxy group in compound (a) for 1 equivalent of active hydrogen in compound (b), said addition product having a softening point of 60° to 180° C.

5. A curable epoxy resin composition comprising (1) an epoxy resin having an average of more than one epoxy group per molecule and (2) an addition product obtained by reacting (a) a polyfunctional epoxy compound and (b) a compound having at least one functional group of OH group, SH group, COOH group and $CONHNH_2$ group together with a tertiary amino group in the molecule in a ratio of 0.8 to 2.5 equivalent of epoxy group in compound (a) for 1 equivalent of active hydrogen in compound (b), said addition product having a softening point of 60° to 180° C.

4,542,203

METHOD FOR PRODUCING BRANCHED AROMATIC POLYESTERS

Katsuji Ueno, Hirakata; Hiroaki Sugimoto, Takatsuki, and Kazuo Hayatsu, Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation-in-part of Ser. No. 559,270, Dec. 8, 1983, abandoned. This application Jul. 30, 1984, Ser. No. 636,017
Claims priority, application Japan, Dec. 27, 1982, 57-231290
Int. Cl.⁴ C08G *63/06, 63/60*
U.S. Cl. 528—126 **5 Claims**

1. In a method for producing aromatic polyesters by the polycondesation of

A: one or more compounds selected from the group consisting of aromatic hydroxy-carboxylic acids and acylated or esterified compounds thereof,

or A with

B: one or more compounds selected from the group consisting of aromatic dicarboxylic acids and esterified compounds or acid halides thereof

and

C: one or more compounds selected from the group consisting of aromatic diphenols and acylated compounds thereof,

a the improvement comprising adding to the reaction system, either in bulk, or gradually during polycondensation

D: one or more compounds selected from the group consisting of 1,3,5-trihydroxybenzene, 3,5-dihydroxybenzoic acid, 5-hydroxyisophthalic acid and acylated or esterified compounds thereof,

whereby D is included in the reaction.

4,542,204

METHOD FOR PARTICULATE PRODUCTION OF CONDENSATE OF ALDEHYDE COMPOUND AND PHENOL COMPOUND

Hiroshi Shibahara, Takasago, and Hiromitsu Tachibana, Takasago, both of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Oct. 28, 1983, Ser. No. 546,270
Claims priority, application Japan, Oct. 28, 1982, 57-190586
Int. Cl.⁴ C08G *8/04;* **C08J** *3/06, 3/14, 3/16*
U.S. Cl. 528—140 **5 Claims**

1. A method for production of a particulate condensate of an aldehyde compound and a phenol compound, said method comprising dispersing a viscous condensate obtained by the reaction of an aldehyde compound with a phenol compound into cold water or hot water by the aid of an inorganic dispersing agent which is insoluble in the water in which said viscous condensate is dispersed and then solidifying said condensate, wherein the inorganic dispersing agent is used in an amount of 0.1 for 10% based on the weight of the phenolic resin.

4,542,205

PROCESS FOR THE MANUFACTURE OF POLYAMIDES UTILIZING A MIXTURE OF AN OXYGENATED PHOSPHORUS COMPOUND AND A MOLYBDENUM COMPOUND AS CATALYST

Benedict S. Curatolo, Maple Heights; Robert C. Sentman, Macedonia, and Gerald P. Coffey, Lyndhurst, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Sep. 17, 1984, Ser. No. 651,144
Int. Cl.⁴ C08G *69/00*
U.S. Cl. 528—336 **23 Claims**

1. In a process for the manufacture of a solid polyamide, the process comprising contacting an α,ω-dinitrile, an α,ω-diamine, water and a catalyst at an elevated temperature and pressure, the improvement comprising using as the catalyst an oxygenated phosphorus compound and a molybdenum compound.

4,542,206

PROCESS FOR PREPARING POLYMERIC ACETAL CARBOXYLATE COMPOSITIONS

David R. Dyroff, Ladue, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jul. 2, 1984, Ser. No. 627,261
Int. Cl.⁴ C08G *2/28*
U.S. Cl. 528—488 **20 Claims**

1. A process which comprises reacting an aqueous solution or slurry of a polymeric acetal carboxylate and alkali metal hydroxide with carbon dioxide to form alkali metal carbonate in intimate admixture with the polymeric acetal carboxylate and recovering the admixture in solid form.

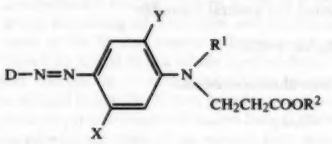
4,542,207

HETEROCYCLIC MONOAZO DYES FOR POLYESTER FIBERS

Toshio Niwa; Kiyoshi Himeno, both of Yokohama, and Junji Yoshihara, Sagamihara, all of Japan, assignors to Research Association Of Synthetic Dyestuffs, Tokyo, Japan

Filed Apr. 7, 1983, Ser. No. 482,802
Claims priority, application Japan, Apr. 15, 1982, 57-63041
Int. Cl.⁴ C09B *29/036, 29/042, 29/045, 29/048*
U.S. Cl. 534—630 **7 Claims**

1. A monoazo dye of the formula:



wherein

D is selected from the group consisting of unsubstituted thiazolyl, unsubstituted benzothiazolyl, unsubstituted thiadiazolyl, unsubstituted pyridyl, unsubstituted thiazolyl, benzothiazolyl substituted with methyl, chlorine, bromine, nitro, C_1–C_8 alkoxycarbonyl, methoxycarbonyl, ethoxycarbonyl, trifluoromethyl, methylsulfonyl, formyl, b,b-dicyanovinyl or b-cyano-b-alkoxycarbonylvinyl, thiadiazolyl substituted with C_1–C_8 alkyl, phenyl, benzyl, phenethyl, cycloalkyl, C_1–C_8 alkylthio, C_1–C_8 alkylsulfinyl, C_1–C_8 alkylsulfonyl, cyano, chlorine, arylthio, arylsulfinyl, or arylsulfonyl, and pyridyl substituted with chlorine, bromine, nitro, methyl, methylsulfonyl, or cyano;

X is selected from the group consisting of H, Cl, CH_3, OCH_3, and acylamino selected from the group consisting of acetylamino, chloroacetylamino, benzoylamino, methylsulfonylamino, chloropropionylamino, ethoxycarbonylamino, and ethylaminocarbonylamino;

Y is selected from the group consisting of H, Cl, CH_3, alk-

oxyl selected from the group consisting of CH_3O and CH_3CH_2O, and alkoxyalkyl selected from the group consisting of methoxymethyl and ethoxyethyl,

R^1 is selected from the group consisting of branched or unbranched C_1–C_8 alkyl; alkoxyalkyl selected from the group consisting of methoxyethyl, ethoxyethyl, and butoxyethyl; alkoxyalkoxyalkyl selected from the group consisting of methoxyethoxyethyl and ethoxyethoxyethyl; phenoxyethyl; aralkyloxy (C_1–C_8) alkyl which may be unsubstituted or substituted with chlorine, hydroxyalkyl selected from the group consisting of hydroxyethyl, hydroxypropyl, hydroxybutyl, hydroxyhexyl and 2-hydroxy-3-methoxypropyl; cyano(C_1–C_2)alkyl, acyloxyalkyl selected from acetyloxyethyl, chloroacetyloxyethyl, chloropropionyloxyethyl and benzoyloxyethyl; alkoxycarbonyloxy alkyl selected from the group consisting of methoxycarbonyloxyethyl and methoxyethoxycarbonylethyl; carbamoyl(C_1–C_2)alkyl; alkoxycarbonyl alkyl selected from the group consisting of methoxycarbonylmethyl, ethoxycarbonylmethyl, methoxycarbonylethyl, ethoxycarbonylethyl, methoxycarbonylpropyl, ethoxycarbonylpropyl, methoxyethoxycarbonylmethyl and benzyloxycarbonylmethyl; aralkyl selected from the group consisting of benzyl, phenethyl and chlorobenzyl; allyloxycarbonyl(C_1–C_2)alkyl; tetrahydrofurfuryl; succinimido ethyl, phthalimido ethyl, cyanoalkoxyalkyl selected from the group consisting of cyanoethoxyethyl and cyanomethoxyethyl; chloroethyl, alkenyl selected from the group consisting of allyl and crotyl; and aryl selected from the group consisting of phenyl, chlorophenyl and tolyl; and

R^2 is selected from the group consisting of phenoxymethyl, phenoxyethyl, benzyl and tetrahydrofurfuryl.

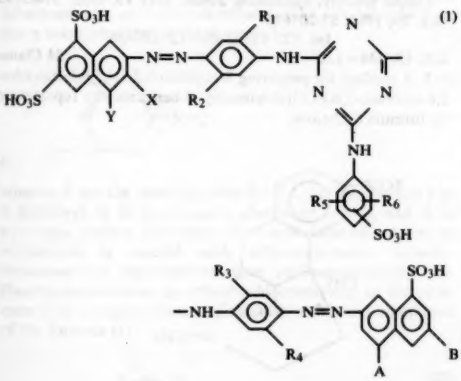
4,542,208

DISAZO COMPOUNDS FOR DYEING CELLULOSIC FIBERS

Junji Odani, Yono, and Shigeyuki Watanabe, Tokyo, both of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 6, 1983, Ser. No. 539,746
Claims priority, application Japan, Oct. 22, 1982, 57-184638
Int. Cl.[4] C09B *43/16*; C07D *251/70*
U.S. Cl. 534—797 **7 Claims**

1. A water-soluble azo compound which, in the free acid form, is represented by the following formula (I):



(I)

wherein one of X and Y is hydrogen and the other is —SO_3H; one of A and B is hydrogen and the other is —SO_3H; each of R_1, R_2, R_3 and R_4 is independently hydrogen, methyl group, ethyl group, methoxy group, ethoxy group, acylamino group or ureido group; and each of R_5 and R_6 is independently hydrogen, methyl group, ethyl group, methoxy group, ethoxy group, acylamino group, chlorine, hydroxyl group or carboxyl group.

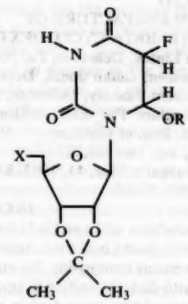
4,542,209

FLUORINE-CONTAINING URIDINE DERIVATIVE AND PREPARATION AND USE THEREOF

Takao Takahara, and Yorisato Hisanaga, both of Osaka, Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Dec. 7, 1983, Ser. No. 558,913
Claims priority, application Japan, Dec. 9, 1982, 57-215748; Dec. 9, 1982, 57-215749
Int. Cl.[4] C07H *19/06*
U.S. Cl. 536—23 **20 Claims**

1. A fluorine-containing uridine derivative of the formula:



(I)

wherein R is lower acyl, fluorine-containing lower acyl or fluorine-containing lower alkyl; and X is hydrogen or hydroxyl.

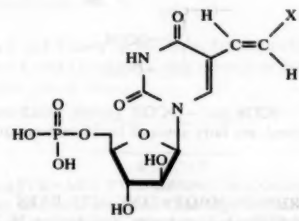
4,542,210

1-β-D-ARABINOFURANOSYL-(E)-5-(2-HALOGENOVINYL)-URACIL-5'-PHOSPHATE, PREPARATION THEREOF AND USE THEREOF

Shinji Sakata, and Haruhiko Machida, both of Choshi, Japan, assignors to Yamasa Shoyu Kabushiki Kaisha, Choshi, Japan

Filed Sep. 3, 1982, Ser. No. 414,824
Claims priority, application Japan, Sep. 9, 1981, 56-142045
Int. Cl.[4] C07H *15/12*
U.S. Cl. 536—29 **9 Claims**

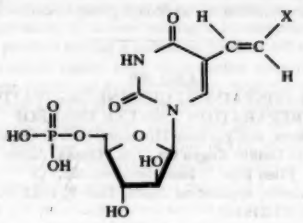
1. A 1-β-D-arabinofuranosyl-(E)-5-(2-halogenovinyl)-uracil-5'-phosphate of the formula (I):



(I)

wherein X represents halogen, or a pharmaceutically acceptable salt thereof.

3. A composition which exhibits activity against a DNA virus that induces deoxypyrimidine nucleoside kinase after infection by the virus, which composition comprises an anti-DNA virus effective amount of a compound of the formula (I) below or a pharmaceutically acceptable salt thereof, and a pharmaceutically acceptable carrier:



(I)

wherein X represents halogen.

4,542,211

PROCESS FOR THE MANUFACTURE OF HEPTAKIS-[2,6-DI-O-METHYL]-BETA-CYCLODEXTRIN

Jozsef Szejtli, Budapest; Andras Liptak, Debrecen; Pal Nanasi, Debrecen; Peter Fügedi, Debrecen; Ildiko Jodal, Debrecen; Lili Kandra, Debrecen, and Lorant Janossy, Debrecen, all of Hungary, assignors to Consortium Für Elektrochemische Industrie GmbH, Munich, Fed. Rep. of Germany

Filed Mar. 5, 1984, Ser. No. 586,203

Claims priority, application Hungary, Mar. 11, 1983, 838/83

Int. Cl.⁴ C08B *37/00*

U.S. Cl. 536—103 **10 Claims**

1. In a process for the manufacture of heptakis-[2,6-di-O-methyl]-beta-cyclodextrin by methylating beta cyclodextrin in an organic medium, the improvement comprising the step of methylating beta-cyclodextrin with dimethylsulfate in amounts of from 15 to 25 moles per 1 mole of beta-cyclodextrin in the presence of an alkalihydroxide, wherein said alkalihydroxide is applied in at least an equimolar amount calculated on the amount of OH-groups to be methylated; at temperatures of from −10° to 0° C.

4,542,212

PHOSPHORYLATED 3-GLYCERYL-ESTERS OF GLUCOSE

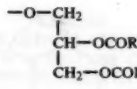
Robert M. Fauve, Sevres, France, assignor to Institut Pasteur, Paris, France

Continuation of Ser. No. 622,004, Oct. 14, 1975, abandoned. This application Jan. 25, 1982, Ser. No. 342,461

Int. Cl.⁴ C07H *13/00*

U.S. Cl. 536—117 **2 Claims**

1. A phospholipid compound, isolatable from bacteria, which is a glucose bearing a phosphoric acid group and at least one diacylated 3-glyceryl-ester group of the formula:



wherein the —OCOR and —OCOR′ groups, which may be the same or different, are fatty acids of 16–18 carbon atoms.

4,542,213

TRIPHENODIOXAZINE ACID DYES

Robert D. McClelland, Manchester, and Andrew H. M. Renfrew, Bury, both of England, assignors to Imperial Chemical Industries PLC, London, England

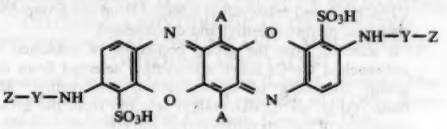
Filed Mar. 15, 1984, Ser. No. 590,057

Claims priority, application United Kingdom, May 4, 1983, 8312210

Int. Cl.⁴ C07D *498/04*

U.S. Cl. 544—76 **1 Claim**

1. A triphenodioxazine dye which, in the free acid form, has the formula:



wherein A is Cl or Br;

Y is $(CH_2)_x$ in which x is 2, 3 or 4; and

Z is $NRCO_2R^1$ or

wherein R is H;

R^1 is alkyl, cycloalkyl or aryl; and

R^2 is —CH=CH—, —CH=CH—CH_2—, —$(CH_2)_{2-4}$— or a 1,2 radical of a 5 or 6 membered carbocyclic compound.

4,542,214

CARBAMATE AND CARBONATE SALTS OF TERTIARY AMINES

Ibrahim S. Bechara, Boothwyn, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 354,844, Mar. 4, 1982, Pat. No. 4,467,089. This application Jan. 5, 1984, Ser. No. 568,173

Int. Cl.⁴ C07D *295/20*

U.S. Cl. 544—107 **20 Claims**

1. The method for producing carbamate and carbonate salts of tertiary amines which comprises admixing a secondary amine with a tertiary amine in the presence of carbon dioxide under reaction conditions.

4,542,215

METHOD FOR PREPARING 8-ACYLTHIO-1,2,3,4,5,6-HEXAHYDRO-2,6-METHANO-3,6(E),11(A)-TRIMETHYL-3-BENZAZOCINES

Mikio Hori, Gifu, and Hajime Fujimura, Kyoto, both of Japan, assignors to Wako Pure Chemical Industries, Ltd., Osaka, Japan

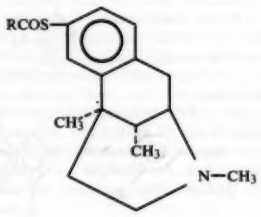
Filed May 19, 1983, Ser. No. 496,151

Claims priority, application Japan, May 19, 1982, 57-85183; Nov. 29, 1982, 57-207616

Int. Cl.⁴ C07D *401/12, 221/26*

U.S. Cl. 544—126 **24 Claims**

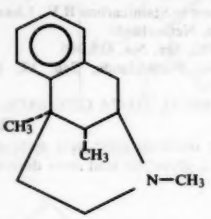
1. A method for preparing 8-acylthio-1,2,3,4,5,6-hexahydro-2,6-methano-3,6(e),11(a)-trimethyl-3-benzazocines represented by formula (I) below:



(I)

wherein R represents an alkyl group having 1 to 10 carbon atoms, a phenyl group or a 5- or 6-membered heterocyclic group wherein the hetero atom is a nitrogen atom or a nitrogen atom and one element selected from the group consisting of a nitrogen atom, a sulfur atom and an oxygen atom, which com-

prises reacting 1,2,3,4,5,6-hexahydro-2,6-methano-3,6(e),11(a)-trimethyl-3-benzazocine represented by formula (II) below:



(II)

or its salt with chlorosulfonic acid, heating the reaction product in the presence of a reducing agent, and reacting the reaction mixture with an acyl halide represented by formula (III)

RCOX (III)

wherein R has the same meaning as defined above and X represents a halogen atom.

4,542,216

PROCESS FOR PRODUCING FLUOROALKOXYAMINOPYRIMIDINES

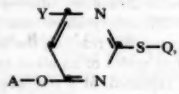
Rudolf W. Pfluger, Münchenstein, Switzerland, assignor to Ciba Geigy Corporation, Ardsley, N.Y.

Filed Mar. 27, 1984, Ser. No. 593,218
Int. Cl.[4] C07D *239/02*
U.S. Cl. 544—320 **31 Claims**

1. A process for producing a fluoroalkoxyaminopyrimidine of the formula I

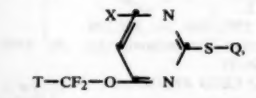
(I)

wherein R is hydrogen, C_1–C_4-alkyl, C_1–C_4-alkoxy or benzyl, X is halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkyl, C_1–C_4-haloalkoxy, C_1–C_4-alkylamino or di-C_1–C_4-alkylamino, and T is hydrogen, chlorofluoromethyl, bromofluoromethyl, difluoromethyl or 1,2,2,2-tetrafluoroethyl, characterised in that a thiopyrimidine of the formula II



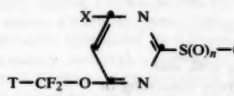
(II)

wherein Y has the meaning given for X under the formula I or is hydroxyl, Q is C_1–C_4-alkyl, phenyl or benzyl, and A is hydrogen, sodium, potassium or an equivalent of calcium or magnesium, is reacted with difluoromethane, difluorobromomethane, tetrafluoroethylene, perfluoropropylene, trifluorobromoethylene or trifluorochloroethylene in the presence of an inorganic base; the resulting compound compound of the formula III



(III)

wherein T and X have the meanings defined under the formula I and Q the meanings defined under the formula II, is converted by oxidation into a compound of the formula IV



(IV)

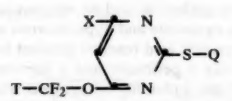
wherein T and X have the meanings defined under the formula I and Q the meanings defined under the formula II, and n is the number one or two; and this compound is treated with an amine of the formula V

H—NH—R (V)

wherein R has the meaning given under the formula I.

29. A process for producing a compound of the formula I, characterised in that a thiopyrimidine of the formula II is reacted in dioxane in the presence of an aqueous sodium hydroxide solution, at a temperature of between 20° and 100° C., with difluorochloromethane, difluorobromomethane, tetrafluoroethylene, perfluoropropylene, trifluorobromoethylene or trifluorochloroethylene, the resulting compound of the formula III is converted in methylene chloride with m-chloroperoxybenzoic acid, or in a glacial acetic acid/methylene chloride mixture with potassium permanganate, at a temperature of between −20° and +25° C., or in glacial acetic acid with aqueous hydrogen peroxide solution at a temperature of between 70° and 90° C., by oxidation into a compound of the formula IV, and this compound is treated at a temperature of between 20° and 100° C., under a pressure of between 1 bar and 20 bar, in a methylene chloride/water mixture with an amine of the formula V.

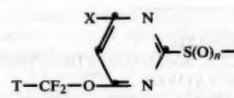
30. A compound of the formula III



(III)

wherein T and X have the meanings defined under the formula I in claim 1, and Q is C_1–C_4-alkyl, phenyl or benzyl.

31. A compound of the formula IV



(IV)

wherein T and X have the meanings defined under the formula I in claim 1, and Q is C_1–C_4-alkyl, phenyl or benzyl, and n is the number one or two.

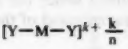
4,542,217

QUATERNARY PYRIMIDINIUM COMPOUNDS

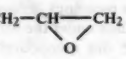
Drahomir Dvorsky, and Karel Cerovsky, both of Dvur Kralove nad Labem, Czechoslovakia, assignors to Vyzkumny ustav zuslechtovaci, Czechoslovakia

Division of Ser. No. 516,147, Jul. 21, 1983, Pat. No. 4,499,282, which is a division of Ser. No. 354,494, Mar. 3, 1982, abandoned. This application Nov. 6, 1984, Ser. No. 668,645
Claims priority, application Czechoslovakia, Mar. 4, 1981, 1537-81; Mar. 20, 1981, 2050-81
Int. Cl.[4] C07D *239/26, 405/06, 405/14*
U.S. Cl. 544—335 **1 Claim**

1. Quaternary ammonium compound of the formula

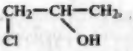


wherein k is an integer of 1–2,
n is an integer of 1–3,
X is an anion of a strong acid, and
Y is selected from the group consisting of



(a)

and



(b)

said group being bound to the nitrogen atoms of a pyrimidine ring M, the individual atoms of the pyrimidine having bound thereto at least one substituent selected from the group consisting of hydrogen, and alkyl groups having from 1–4 carbon atoms.

4,542,218

METHOD OF HALOGENATING ISOCYANURIC ACID

Thomas H. Spooner, Sulphur, La., assignor to Olin Corporation, Cheshire, Conn.

Filed Jan. 13, 1984, Ser. No. 570,315
Int. Cl.⁴ C07D *251/26*
U.S. Cl. 544—190 **8 Claims**

1. A method for reacting gaseous halogen with a liquid medium comprised of an aqueous solution selected from the group consisting of an aqueous solution of a mixture of isocyanuric acid and sodium hydroxide and an aqueous solution of a mixture of sodium cyanurate and hypochlorous acid to form a halogenated isocyanuric acid reaction product in an agitated reaction zone having a perimeter and a horizontal cross sectional area divided into a plurality of segments which comprises contacting said gaseous halogen with said liquid medium in said reaction zone through a plurality of feed locations, each of said feed locations being positioned in a different segment and located substantially equidistant from said perimeter.

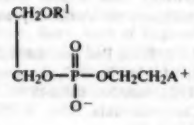
4,542,219

CERTAIN HETEROCYCLIC AMMONIO PHOSPHATE DERIVATIVES

Motoo Hozumi, Omiya; Hiroaki Nomura, Takatsuki, and Yoshio Yoshioka, Nara, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Mar. 24, 1982, Ser. No. 361,409
Claims priority, application Japan, Mar. 30, 1981, 56-48287; Feb. 19, 1982, 57-26692
Int. Cl.⁴ C07F *9/58, 9/60, 9/62, 9/65*
U.S. Cl. 546—22 **6 Claims**

1. A compound, inclusive of salts thereof, of the formula:



wherein
R^1 is C_{8-26} aliphatic hydrocarbon residue, and
A^+ is cyclic ammonio.

4,542,220

PREPARATION OF DERIVATIVES OF DICHLOROACETIC ACID ESTERS

Antonius Corvers, Beek, and Joannes M. C. A. Mulders, Geleen, both of Netherlands, assignors to Stamicarbon B.V., Licensing Subsidiary of DSM, Geleen, Netherlands

Filed Sep. 15, 1982, Ser. No. 418,546
Claims priority, application Netherlands, Sep. 17, 1981, 8104287
Int. Cl.⁴ C07D *213/55, 307/54, 333/24;* C07C *69/76*
U.S. Cl. 546—341 **5 Claims**

1. A process for prepring dichloroacetic acid ester compounds, comprising reacting a glyoxylic acid ester derivative of formula

$$R_1—CO—COOR_2,$$

wherein
R_1 is selected from the group consisting of phenyl, naphthyl, pyridyl, furyl, and thienyl, and wherein said R_1 may be substituted with Cl, NO_2, alkyl having 1–8 C atoms, or alkoxy having 1–8 C atoms, and wherein
R_2 is selected from the group consisting of alkyl having 1–8 C atoms, cycloalkyl having 5–8 C atoms, phenyl, and naphthyl,
with phosphorus pentachloride
in a dispersant selected from the group consisting of cyclohexane, chloroform and phosphorousoxychloride, suitable for distributing said phosphorus pentachloride, and
at a temperature of from 35° to 150° C.
to form the corresponding dichloroacetic ester compound having the formula,

$$R_1—CCl_2—COOR_2.$$

4,542,221

EXCHANGING FLUORINE FOR CHLORINE IN A CHLORINATED PYRIDINE WITH AN ALKALI METAL FLUORIDE

Edward M. Jones, Kings Lynn, England, assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 264,490, May 18, 1981, abandoned. This application Jun. 3, 1983, Ser. No. 500,686
Int. Cl.⁴ C07D *213/02*
U.S. Cl. 546—345 **11 Claims**

1. A process for preparing 3-chloro-2,4,5,6-tetrafluoropyridine, 3,5-dichloro-2,4,6-trifluoropyridine, 2,4-difluoro-3,5,6-trichloropyridine, or 2,6-difluoro-3,4,5-trichloropyridine from pentachloropyridine, 3,5-dichloro-2,6-difluoropyridine from 2,3,5,6-tetrachloropyridine, or 2,6-difluoropyridine from 2,6-dichloropyridine, which process comprises reacting the polychloropyridine with from 1.0 to 1.33 moles of an alkali metal fluoride per chlorine atom to be replaced, at a temperature within the range of from 150° to 400° C. with agitation and in the presence of a catalytic amount of a metal chloride compound selected from the group consisting of $SbCl_3$, $AlCl_3$, $ZnCl_2$ and $FeCl_3$.

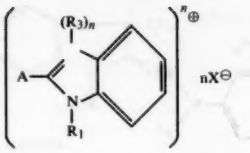
4,542,222

BENZIMIDAZOLES

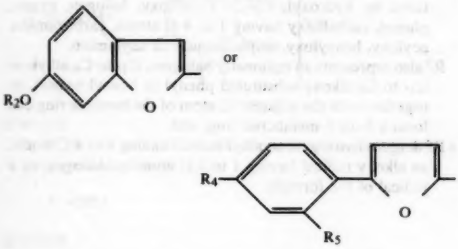
Hans R. Meyer, Binningen, Switzerland, assignor to Ciba-Ceigy Corporation, Ardsley, N.Y.

Filed Dec. 18, 1981, Ser. No. 332,396
Claims priority, application Switzerland, Dec. 29, 1980, 9611/80; Jul. 16, 1981, 4666/81
Int. Cl.⁴ C07D *405/04*
U.S. Cl. 548—327 **7 Claims**

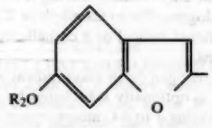
1. A benzimidazole of the formula



in which A is the radical



R_1 is cyanomethyl, 1-cyanoethyl or 2-cyanoethyl, R_2 is C_{1-4}-alkyl, R_3 is cyanomethyl, cyanoethyl or C_{3-6}-carboalkoxymethyl, R_4 and R_5 independently of one another are hydrogen or chlorine, X^- is a colorless anion of an organic or inorganic acid and n is the number 0 or 1, provided that when n is 0, R_1 is cyanomethyl or 1-cyanoethyl, and provided that when A is



and R_1 is cyanoethyl, R_3 is not cyanomethyl.

4,542,223

PROCESS FOR THE PREPARATION OF CATIONIC METHINE DYESTUFFS

Roderich Raue; Hans-Peter Kühlthau, both of Leverkusen, and Klaus-Friedrich Lehment, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

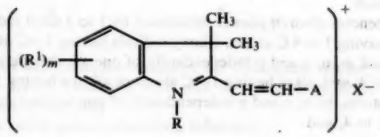
Filed Mar. 14, 1983, Ser. No. 475,014

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1982, 3210596

Int. Cl.⁴ C07D *209/14, 209/18, 403/06*

U.S. Cl. 548—455 **5 Claims**

1. In the preparation of cationic methine dyestuffs of the general formula

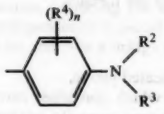


in which

R represents an alkyl radical which has 1 to 4 C atoms and is optionally substituted by hydroxyl, alkoxy having 1 to 4 C atoms, acyloxy, halogen, cyano, carboxyl, C_1 to C_4-carboalkoxy, carbon-amido or acetyl,

R^1 represents hydrogen, alkyl having 1 to 4 C atoms, halogen, alkoxy having 1 to 4 C atoms, hydroxyalkoxy having 2 to 4 C atoms, a phenoxy, benzyloxy or benzyl radical which is optionally substituted by halogen, C_1 to C_4-alkyl or C_1 to C_4-alkoxy, carboxyl, a carboxylic acid alkyl ester which has 1 to 4 C atoms, a carbon-amide group which is optionally substituted by 1 or 2 C_1 to C_4-alkyl radicals, a sulphonamide group which is optionally substituted by 1 or 2 C_1 to C_4-alkyl radicals, alkylsulphonyl having 1 to 4 C atoms, phenylsulphonyl or a cyano, trifluoromethyl, acetyl or benzoyl group,

A represents a radical of the formula



in which

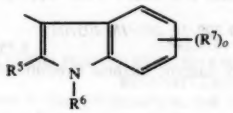
R^2 and R^3 independently of one another represent an alkyl radical which has 1 to 4 C atoms and is optionally substituted by hydroxyl, C_1 to C_4-alkoxy, halogen, cyano, phenyl, carboalkoxy having 1 to 4 C atoms, carbon-amido, acyloxy, benzyloxy, sulphonamido or acylamino,

R^2 additionally represents a phenyl or benzyl radical which is optionally substituted by halogen, C_1 to C_4-alkyl or C_1 to C_4-alkoxy, or, together with the adjacent C atom of the benzene ring, can form a partially hydrogenated 5-membered or 6-membered ring which contains N and optionally contains O, and

R^4 denotes hydrogen, an alkyl radical having 1 to 4 C atoms, an alkoxy radical having 1 to 4 C atoms or halogen,

or

A represents a radical of the formula



in which

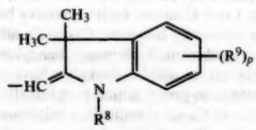
R^5 represents an alkyl radical having 1 to 4 C atoms, a phenyl radical which is optionally substituted by halogen, C_1 to C_4-alkyl or C_1 to C_4-alkoxy, or a carboalkoxy radical having 1 to 4 C atoms,

R^6 represents hydrogen, an alkyl radical which has 1 to 4 C atoms and is optionally substituted by hydroxyl, halogen, alkoxy having 1 to 4 C atoms, cyano or acyloxy, and

R^7 represents hydrogen, halogen, C_1 to C_4-alkyl, C_1 to C_4-alkoxy, carboalkoxy having 1 to 4 C atoms, C_1 to C_4-alkylsulphonyl, phenylsulphonyl, acetyl or benzoyl,

or

A represents a radical of the formula

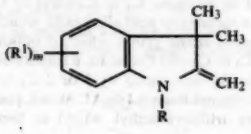


in which

R^8 and R^9 independently of one another have the same meaning as R and R^1,

and in which

X represents the radical of an inorganic acid and
the indices m, n, o and p independently of one another denote 1 to 4,
by subjecting a compound of the formula



wherein
R, R^1 and m have the meaning indicated above, to a condensation reaction with a compound of the formula

A—CHO

in which A has the meaning indicated above,
and with acids, the improvement which comprises carrying out the condensation reaction by homogeneously mixing the reactants as a viscous melt with 1 to 5 equivalents of a strong inorganic acid or acid salt thereof in the presence of up to 15% by weight of water based on the total weight of the organic starting components, and removing substantially all water present.

4,542,224

PROCESS FOR PREPARING CATIONIC METHINE DYESTUFFS

Roderich Raue, and Hans-Peter Kühlthau, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

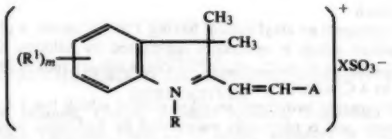
Filed Apr. 4, 1983, Ser. No. 481,698

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1982, 3213966

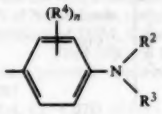
Int. Cl.[4] **C07D** *209/14, 209/18, 405/06*

U.S. Cl. 548—455 **5 Claims**

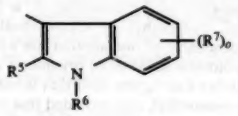
1. In the preparation of cationic methine dyestuffs of the general formula



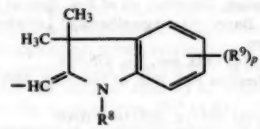
in which
R represents an alkyl radical which has 1 to 4 C atoms and is optionally substituted by hydroxyl, alkoxy having 1 to 4 C atoms, acyloxy, halogen, cyano, carboxyl, C_1- to C_4-carbalkoxy, carboxamido or acetyl,
R^1 represents hydrogen, alkyl having 1 to 4 C atoms, halogen, alkoxy having 1 to 4 C atoms, hydroxyalkoxy having 2 to 4 C atoms, an optionally halogen-, C_1- to C_4-alkoxy- or C_1- to C_4-alkoxy-substituted phenoxy, benzyloxy or benzyl radical, carboxyl, an alkyl carboxylate having 1 to 4 C atoms, a carboxamide group which is optionally substituted by 1 or 2 C_1- to C_4-alkyl radicals, a sulphonamide group which is optionally substituted by 1 or 2 C_1- to C_4-alkyl radicals, alkylsulphonyl having 1 to 4 C atoms, phenylsulphonyl or a cyano, trifluoromethyl, acetyl or benzoyl group,
A represents a radical of the formula



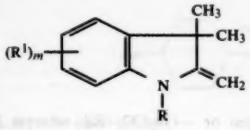
in which the radicals
R^2 and R^3 independently of each other represent an alkyl radical which has 1 to 4 C atoms and is optionally substituted by hydroxyl, C_1- to C_4-alkoxy, halogen, cyano, phenyl, carbalkoxy having 1 to 4 C atoms, carboxamido, acyloxy, benzyloxy, sulphonamido or acylamino,
R^2 also represents an optionally halogen-, C_1- to C_4-alkyl- or C_1- to C_4-alkoxy-substituted phenyl or benzyl radical, or together with the adjacent C atom of the benzene ring can form a 5- or 6-membered ring, and
R^4 denotes hydrogen, an alkyl radical having 1 to 4 C atoms, an alkoxy radical having 1 to 4 C atoms or halogen, or a radical of the formula



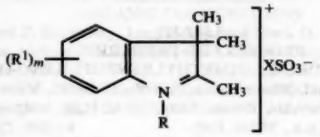
in which
R^5 represents an alkyl radical having 1 to 4 C atoms, an optionally halogen-, C_1- to C_4-alkyl- or C_1- to C_4-alkoxy-substituted phenyl radical or a carbalkoxy radical having 1 to 4 C atoms,
R^6 represents hydrogen or an alkyl radical which has 1 to 4 C atoms and is optionally substituted by hydroxyl, halogen, alkoxy having 1 to 4 C atoms, cyano or acyloxy, and
R^7 represents hydrogen, halogen, C_1- to C_4-alkyl, C_1- to C_4-alkoxy, carbalkoxy having 1 to 4 C atoms, C_1- to C_4-alkylsulphonyl, phenylsulphonyl, acetyl or benzoyl,
or a radical of the formula



in which
R^8 and R^9 independently of each other have the same respective meaning as R and R^1,
in which
X denotes phenyl, phenyl substituted by 1 to 3 alkyl radicals having 1 to 4 C atoms, alkoxy radicals having 1–4C atoms, and m, n, o and p independently of one another denote 1 to 4, and, alkyl having 1–4C atoms or alkoxy having 1–4C atoms, m, n, o and p independently of one another denote 1 to 4, and
in which
acyloxy is acetoxy, propionyloxy, benzoyloxy or carbamoyloxy,
by condensing a methylene compound of the formula



or a salt of the formula



in which

R, R^1, X and m have the abovementioned meaning, with a compound of the formula

A—CHO

in which

A has the abovementioned meaning, and with 1–7 mols of an acid of the formula

XSO_3H

or of the salt with 0–6 mols of the acid the improvement which comprises homogeneously mixing the reactants as a viscous melt in the presence of up to 15% by weight of water relative to the total weight of the organic starting components, and removing substantially all water present,

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4,542,225

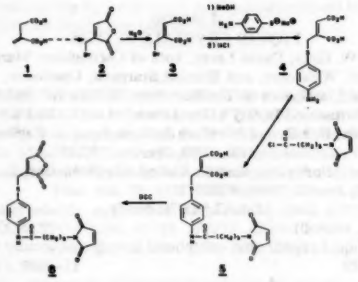
ACID-CLEAVABLE COMPOUND

Walter A. Blattler; John M. Lambert, both of Brookline, and Peter D. Senter, Jamaica Plain, all of Mass., assignors to Dana-Farber Cancer Institute, Inc., Boston, Mass.

Filed Aug. 29, 1984, Ser. No. 645,614

Int. Cl.[4] C07D *519/00, 521/00*

U.S. Cl. 548—473 **20 Claims**

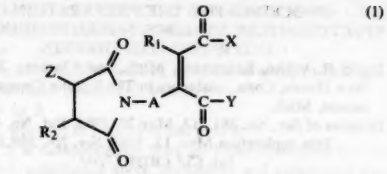


1. An acid-cleavable complex for controlled release of an amino-group-containing substance to a liquid medium, said complex comprising

said amino-group-containing substance

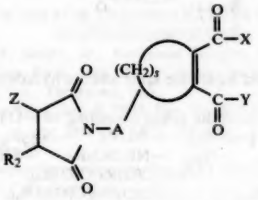
a sulfide-linked substance, and

an acid cleavable linker between the sulfide-linked substance and the amino-group-containing substance, said complex comprising one of the two following units:



(1)

where: one of X and Y is O^-; the other of X and Y is the residue of the amino-group-containing substance whose amino nitrogen forms an amide link with a carbonyl group of the maleic acid function; Z is the sulfide-linked substance, including the sulfur of that link; R_1 and R_2 are independently selected from H and alkyl groups of C_5 or less; and A is a bridge unit; and



(2)

where X, Y, Z, R_2, and A are as defined above, and s=2–5.

4,542,226

METHOD FOR MAKING SILOXANENORBORNANE BISANHYDRIDE

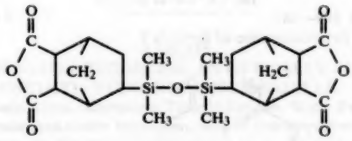
Victoria J. Eddy, Schenectady, and John E. Hallgren, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 16, 1984, Ser. No. 631,421

Int. Cl.[4] C07F *7/18, 7/20*

U.S. Cl. 549—214 **3 Claims**

1. A method for making silylnorbornane dianhydride of the formula



which comprises

(1) hydrosilylating 5-norbornene-2,3-carboxylic anhydride with dimethylchlorosilane in the presence of an effective amount of a platinum catalyst and an organic solvent;

(2) vacuum distilling the mixture of (1) to recover 5-dimethylchlorosilyl-norbornane-2,3-dicarboxylic anhydride;

(3) hydrolyzing the 5-dimethylchlorosilyl-norbornane 2,3-dicarboxylic anhydride at a temperature in the range of from about 100°–180° C. and

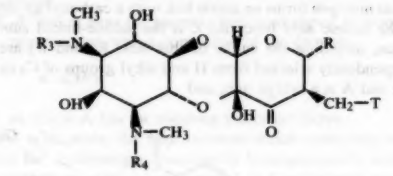
(4) stripping the mixture of (3) under reduced pressure.

4,542,227
PROCESSES FOR THE PREPARATION OF SPECTINOMYCIN ANALOGS, NOVEL PRODUCTS AND INTERMEDIATES THEREIN

David R. White, Kalamazoo, Mich., and Clarence J. Maring, New Haven, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 381,113, May 24, 1982, Pat. No. 4,467,103. This application Mar. 12, 1984, Ser. No. 588,176
Int. Cl.⁴ C07H *17/04*
U.S. Cl. 549—361 **3 Claims**

1. A compound of the formula



V

wherein R_3 and R_4 are the same and are hydrogen or blocking groups;

T is selected from the group consisting of —OY, —CHR_5.C(O)R_6, [—NH_2,] —NHR_5, —NR_5R_6, —NO_2, —$NHNH_2$, —N_3, —$NR_5SO_2R_6$, —SH, —SR_5, —S—SM_2^+, —CH[C(O)R_5]C(O)R_6], —C≡N, —CHC(N)R_5, —CH[C(O)R_5][C(O)OR_6], —CH[-C(O)OR_5][C(O)OR_6], —$CR_5R_6NO_2$, —$CR_5R_6SO_2R_7$, —CR_5C(N)C(N),

wherein Y is aryl or —CR_5=CHR_6 or —N=O, and

R_5, R_6, and R_7 are the same or different and are lower alkyl or aryl with the proviso that when T is —NHR_5, —NR_5R_6 or —OCR_5=CHR_6, R_5 and R_6 are aryl;

wherein

R is hydrogen, alkyl of from C_1 to C_{20}, inclusive, lower alkenyl, lower haloalkyl, lower aminoalkyl, lower alkynyl or —$(CH_2)_n$—OX

wherein X is selected from the group consisting of hydrogen, lower alkyl, lower alkenyl, benzyl, and acyl

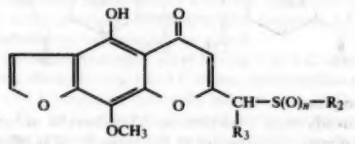
wherein n is an integer of zero to four with the proviso that when n is zero —OX cannot be hydroxy and biologically acceptable salts thereof.

4,542,228
4-HYDROXY-FUROCHROMONE INTERMEDIATES FOR ANTIATHERSCLEROTIC COMPOUNDS

Ronald B. Gammill, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 378,700, May 17, 1982, Pat. No. 4,438,274. This application Jan. 3, 1984, Ser. No. 567,472
Int. Cl.⁴ C07D *311/78*
U.S. Cl. 549—387 **5 Claims**

1. A fuorochormone of formula I



I

wherein n is zero, one or two;

wherein R_2 is C_1–C_6 alkyl or PhX;

wherein (PhX) is phenyl substituted by zero to 3 of the following:

(a) (C_1–C_4)alkyl,

(b) chloro,

(c) fluoro,

(d) bromo,

(e) nitro,

(f) trifluoromethyl; or

(g) OR_5;

wherein R_5 is

(a) hydrogen, or

(b) (C_1–C_4)alkyl;

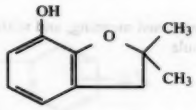
wherein R_3 is hydrogen or —O—CO—R_4, wherein R_4 is C_1–C_4 alkyl; with the proviso that R_3 is —O—CO—R_4 only when n is zero and with a further proviso that when R_2 is PhX n is zero and R_3 is hydrogen.

4,542,229
PROCESS FOR PREPARING 2,3-DIHYDRO-2,2-DIMETHYLBENZOFURAN-7-OL

Paolo Maggioni, Montevecchia; Francesco Minisci, Milan, and Mariano Correale, Bonate Sotto, all of Italy, assignors to Brichima S.p.A., Milan, Italy

Filed Apr. 11, 1983, Ser. No. 483,612
Claims priority, application Italy, Apr. 19, 1982, 20803 A/82
Int. Cl.⁴ C07D *307/86*
U.S. Cl. 549—462 **14 Claims**

1. A process for preparing 2,3-dihydro-2,2-dimethylbenzofuran-7-ol of formula



(I)

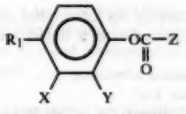
which process comprises the steps of: (a) selective monoetherification of pyrocatechol with a methallyl halide in the presence of an inorganic base in the solid state and a catalyst selected from the group consisting of quaternary ammonium salts, quaternary phosphonium salts and crown ethers; (b) thermal transposition of the o.methallyloxyphenol obtained in step (a) by heating the solution to a temperature of between 130° and 200° C.; and (c) cyclisation of the o.methallylpyrocatechol obtained in step (b) in the heterogeneous phase by stirring in the presence of an insoluble sulphonic acid resin catalyst at a temperature of between 10° and 150° C., said steps being carried out in a reaction medium consisting of inert organic solvent that remains a liquid at the elevated temperature of the process and in an inert gas atmosphere without separating intermediate products.

4,542,230
LIQUID CRYSTALS ESTERS

George W. Gray; David Lacey, both of Cottingham; Martin G. Pellatt, Wimborne, and Bennett Sturgeon, Upminster, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

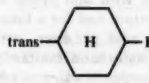
Filed Sep. 30, 1980, Ser. No. 192,557
Claims priority, application United Kingdom, Oct. 2, 1979, 7934127; Jun. 27, 1980, 8021072
Int. Cl.⁴ C07C *69/74*
U.S. Cl. 560—01 **34 Claims**

1. A liquid crystal ester compound having a molecular structure



formula (II)

wherein X is fluorine and Y is hydrogen or X is hydrogen and Y is fluorine, R_1 is an alkyl group and Z is



where R_3 is an alkyl group.

4,542,231

STABILIZED ETHYLENICALLY UNSATURATED ORGANIC COMPOSITIONS

Edward F. Dougherty, League City, and Mark O. Scates, Pearland, both of Tex., assignors to Celanese Corporation, New York, N.Y.

Filed Jul. 5, 1983, Ser. No. 510,870
Int. Cl.[4] C07C *67/62, 103/33, 7/20*
U.S. Cl. 560—4 **16 Claims**

1. A composition of an ethylenically unsaturated organic compound capable of addition polymerization stabilized from premature polymerization in the liquid phase by the addition of stabilizing amounts of a combination of a cerium compound soluble in said ethylenically unsaturated organic compound and a phenolic type inhibitor, said ethylenically unsaturated organic compound being selected from the group consisting of acrylic acid, methacrylic acid, vinyl acetate, styrene, acrylonitrile, vinyl chloride, acrylamide, n-methylolacrylamide, glycidyl methacrylate, alkyl acrylate and methacrylate esters wherein the alkyl groups contain from 1 to 10 carbon atoms, and esters of acrylic acid and a saturated aliphatic polyol having 2 to 10 carbon atoms and 2 to 5 hydroxy groups, said esters each containing 2 to 5 acrylate groups.

4,542,232

PROCESS FOR PREPARING HYDROXYETHYL P-(β HYDROXYETHOXY)BENZOATE

Guy R. Collins, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 13, 1984, Ser. No. 639,761
Int. Cl.[4] C07C *69/76*
U.S. Cl. 560—064 **5 Claims**

1. A process for preparing hydroxy ethyl p-(βhydroxyethoxy) benzoate comprising the steps of:

(a) contacting in the liquid phase ethylene carbonate and p-hydroxybenzoic acid in a mole ratio of at least about 2.5:1 at a temperature in the range from about 150° to about 180° C. in the presence of a catalytic amount of KI, CsI, KBr, KF or CsF; and

(b) recovering hydroxy ethyl p-(βhydroxyethoxy) benzoate from the liquid reaction medium.

4,542,233

PROCESS FOR PREPARING BIARYL COMPOUNDS VIA COUPLING OF AN ARYLAMINE WITH AN ARENE

Oreste Piccolo, Leghorn; Aldo Belli, Cornate D'Adda; Giovanni Villa, Monticello; Enrico Zen, Macherio, and Attilio Citterio, Monza, all of Italy, assignors to Biaschim S.p.A., Milan, Italy

Filed Jul. 20, 1983, Ser. No. 515,498
Claims priority, application Italy, Jul. 23, 1982, 22554 A/82
Int. Cl.[4] C07C *67/343, 45/69, 51/353, 120/00, 37/14, 76/02, 41/18, 148/00, 17/26, 2/68, 2/69*
U.S. Cl. 560—21 **15 Claims**

1. In a process for preparing biaryl compounds via coupling of an arylamine with an arene in the presence of a nitrite, an acid and metal copper or a derivative thereof according to the following scheme:

$$(R)_xArNH_2+(R')_yAr'H\rightarrow(R)_xAr-Ar'(R')_y \quad (I)$$

wherein

Ar and Ar′ are independently aromatic radicals;

x and y are independently selected from 0,1,2 and 3;

R and R′ are independently selected from C 1–6 alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, halogen, nitro, cyano, OZ, SZ, COZ, —O—COZ, (NC)m CBp, (AOOC)m—CBp and (NC(AOOC)CBp,

where

Z is hydrogen, C 1–6 alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl or aryl;

m is 1 or 2;

p is 2 when m is 1 and 1 when m is 2;

each B is independently selected from hydrogen, C 1–6 alkyl, substituted alkyl, cycloalkyl and substituted cycloalkyl; and

each A is independently selected from hydrogen, C 1–6 alkyl, substituted alkyl, cycloalkyl and trialkylsilyl or, when m is 2, both A may form a cyclic ester;

the improvement comprising carrying out the reaction in the presence of a trialkylorthoformate.

4,542,234

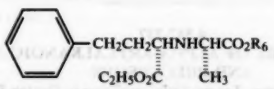
PROCESS FOR THE SEPARATION OF (S,S) DIASTEREOISOMERS

Laurence W. Reilly, Jr., Yorktown Heights, and Jeffrey N. Barton, New York, both of N.Y., assignors to USV Pharmaceutical Corp., Tarrytown, N.Y.

Filed Oct. 6, 1983, Ser. No. 539,460
Int. Cl.[4] C07C *101/20*
U.S. Cl. 560—38 **4 Claims**

1. A process for separating the (S,S) diastereoisomer of a compound of the formula

(A)



from a solution containing said (S,S) isomer and one or both of the corresponding (R,S) and (S,R) diastereoisomers in a nonpolar, water-immiscible organic solvent selected from the group consisting of toluene, methylene chloride, diethyl ether, chloroform, ethyl acetate, and mixtures thereof, wherein R_6 is t-butyl or benzyl, comprising

(i) reacting said diastereoisomers with an acid, selected from the group consisting of maleic, tartaric, p-nitrocinnamic, cinnamic, hippuric, citric, and 2,4-dichlorobenzoic acids, which forms acid addition salts with said diastereoisomers which salts are characterized in that the salts of the (R,S) and (S,R) diastereoisomers are soluble in said solution and said salt of the (S,S) diastereoisomer is not, under conditions wherein the salt of the (S,S) diastereoisomer selectively precipitates from said solution, and

(ii) converting said precipitated salt to the (S,S) compound of formula (A).

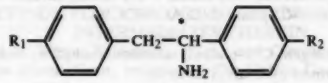
4,542,235

METHOD FOR PRODUCING AN OPTICALLY ACTIVE 2,2-DIMETHYLCYCLOPROPANECARBOXYLIC ACID

Masayoshi Minai, Moriyama; Tadashi Katsura, Suita; Kazuhiko Hamada, and Gohfu Suzukamo, both of Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Apr. 5, 1983, Ser. No. 482,259
Claims priority, application Japan, Apr. 12, 1982, 57-61237; Jan. 10, 1983, 58-2600; Jan. 17, 1983, 58-6348; Feb. 9, 1983, 58-20982
Int. Cl.[4] C07B *19/00*
U.S. Cl. 562—401 **7 Claims**

1. A method for producing an optically active 2,2-dimethylcyclopropanecarboxylic acid which comprises reacting an optically active diphenylethylamine represented by the formula (I),



(I)

wherein R_1 and R_2 are each a hydrogen atom or a lower alkyl group, with 2,2-dimethylcyclopropanecarboxylic acid in a solvent to achieve the optical purification of said acid.

4,542,236

PROCESS FOR PREPARING OPTICALLY ACTIVE PHENYLALANINE

Yasuhisa Tashiro, Yokohama, and Shigeru Aoki, Matsudo, both of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 25, 1984, Ser. No. 634,228

Claims priority, application Japan, Aug. 2, 1983, 58-140591; Feb. 24, 1984, 59-32543

Int. Cl.⁴ C07B *19/00*

U.S. Cl. 562—401 **10 Claims**

1. A process for preparing optically active phenylalanine, which comprises resolving the mixture of a complex of D-phenylalanine and optically active mandelic acid and a complex of L-phenylalanine and optically active mandelic acid in a solvent containing hydrochloric acid, carboxylic acid, phosphoric acid or a salt thereof to obtain the complex having lower solubility, and removing said optically active mandelic acid from the obtained complex to obtain optically active phenylalanine.

4,542,237

MANUFACTURE OF ALPHA-ARYLALKANOIC ACIDS AND PRECURSORS

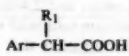
George C. Schloemer, Lyons, Colo., assignor to Syntex Pharmaceuticals International Limited, Hamilton, Bermuda

Continuation of Ser. No. 259,119, Apr. 30, 1981,. This application Jun. 7, 1983, Ser. No. 502,036

Int. Cl.⁴ C07C *63/36, 69/76*

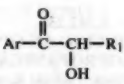
U.S. Cl. 562—466 **19 Claims**

1. A process for preparing an α-arylalkanoic acid of the formula

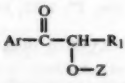


or an ester, orthoester or amide thereof wherein Ar is an aryl moiety and R_1 is lower alkyl having 1–8 carbon atoms inclusive or cycloalkyl having 3–7 carbon atoms inclusive, which comprises:

contacting a ketal or thioketal of a compound of the formula



wherein Ar and R_1 are as defined above with an esterifying agent to form the corresponding ketal or thioketal ester substrate of the compound of the formula



wherein Ar and R_1 are as defined above and -O-Z is the anionic residue of an organic acid and is sufficiently labile to disassociate from the ester substrate upon contact with a protic or dipolar, aprotic solvent, maintaining said ester substrate in contact with said protic or dipolar, aprotic solvent at a temperature and for a time sufficient to form the α-arylalkanoic acid or ester, orthoester or amide thereof, and optionally concomitantly or sequentially hydrolyzing any ester, orthoester or amide formed to the corresponding α-arylalkanoic acid.

4,542,238

OPTICALLY ACTIVE SUBSTANCE

Nobuo Ishikawa, Yokohama, Japan, assignor to Daikin Kogyo Co., Ltd., Osaka, Japan

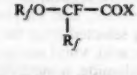
Continuation of Ser. No. 424,178, Sep. 27, 1982, abandoned. This application Oct. 29, 1984, Ser. No. 665,501

Claims priority, application Japan, Sep. 30, 1981, 56-1554401

Int. Cl.⁴ C07C *59/00*

U.S. Cl. 562—586 **16 Claims**

1. An optically active substance consisting of the optically active enantiomer perfluoro-2-alkoxy carboxylic acid or its derivative represented by the following general formula:



where R_f is a perfluoroaliphatic group, R_f is a perfluoroisopropyl group, a perfluorobutyl group or a perfluoroisobutyl group, X is a halogen or a hydroxyl group, and C is a chiral carbon atom.

4,542,239

PROCESS FOR RECOVERING TEREPHTHALIC ACID FROM WASTE POLYETHYLENE TEREPHTHALATE

Richard A. Lamparter, Houghton, Mich.; Bruce A. Barna, Las Cruces, N. Mex., and David R. Johnsrud, North Brunswick, N.J., assignors to Board of Control of Michigan Technological University, Houghton, Mich.

Continuation of Ser. No. 322,474, Nov. 18, 1981, abandoned. This application Jun. 7, 1983, Ser. No. 501,805

Int. Cl.⁴ C07C *51/487, 29/88*

U.S. Cl. 562—487 **17 Claims**

1. A process for recovering terephthalic acid from scrap polyethylene terephthalate comprising the steps of

(a) reacting said scrap polyethylene terephthalate with an aqueous medium containing ammonium hydroxide at a temperature of at least 325° F. and at an elevated pressure from a time period sufficient to cleave the polyester linkage and form a water soluble diammonium salt of terephthalic acid which is maintained in solution during this reaction;

(b) physically separating any undissolved solids from the resulting reaction product;

(c) acidfying the remaining liquid with an acid to precipitate terephthalic acid; and

(d) separating the precipitated terephthalic acid from the remainder.

4,542,240

PROCESS FOR THE PRODUCTION OF GUANIDINE HYDROCHLORIDE

Peter Schalke, Rodenbach; Langer Manfred, Karlstein, and Klaus Huthmacher, Gelnhausen, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 24, 1981, Ser. No. 237,728

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1980, 3007530

Int. Cl.⁴ C07C *128/00*

U.S. Cl. 564—232 **27 Claims**

1. A process for producing guanidine hydrochloride com-

prising reacting cyanogen chloride with ammonia in the absence of a solvent at a temperature of 140° to 220° C.

4,542,241

MERCAPTOHYDROXY ALKANES

Roy A. Gray, and Gary D. Macdonell, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 503,432, Jun. 13, 1983, Pat. No. 4,472,569. This application Jun. 13, 1984, Ser. No. 620,225

Int. Cl.[4] C07C *149/18*

U.S. Cl. 568—62 **1 Claim**

1. 1,10-Dimercapto-2,9-dihydroxydecane.

4,542,242

PLATINUM (O) COMPLEX-BASED HYDROFORMYLATION CATALYST

Chao-Yang Hsu, Media; James E. Lyons, Wallingford, and Paul E. Ellis, Jr., Downingtown, all of Pa., assignors to Sun Refining and Marketing Company, Philadelphia, Pa.

Division of Ser. No. 598,931, Apr. 11, 1984,. This application Jan. 30, 1985, Ser. No. 696,384

Int. Cl.[4] C07C *45/50*

U.S. Cl. 568—454 **14 Claims**

1. In the process of hydroformylating an olefin having from about 2 to 20 carbon atoms by reacting the olefin with hydrogen and carbon monoxide at elevated pressures in the presence of a catalyst to produce an aldehyde, the improvement of using as the catalyst a catalyst system which comprises a complex of (1) a platinum (0) complex containing two bidentate diphosphine, diarsine or distibine ligands, and (2) a Group IVB metal halide.

4,542,243

PROCESS FOR PRODUCING 3-PHENOXYBENZYL 2-(4-ALKOXYPHENYL)-2-METHYLPROPYL ETHERS

Mitsumasa Umemoto; Tamotsu Asano; Teruyuki Nagata, all of Fukuoka, and Satoshi Numata, Kanagawa, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Oct. 7, 1983, Ser. No. 540,017

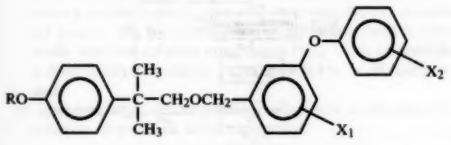
Claims priority, application Japan, Oct. 19, 1982, 57-182200; Nov. 12, 1982, 57-197638

Int. Cl.[4] C07C *41/24, 41/16, 43/267*

U.S. Cl. 568—636 **8 Claims**

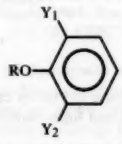
1. A process for producing 3-phenoxybenzyl 2-(4-alkoxyphenyl)-2-methylpropyl ethers represented by the formula (IV):

(IV)



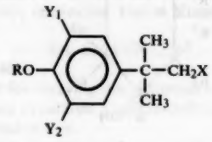
wherein R is a lower alkyl group and X_1 and X_2 are each a hydrogen or fluorine atom, which comprises reacting a 2-halogeno-1-alkoxybenzene represented by formula (V):

(V)



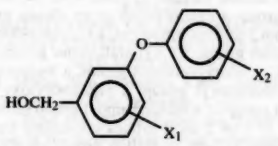
wherein Y_1 and Y_2 are each a hydrogen, chlorine or bromine atom, at least one of them being a chlorine or bromine atom, and R has the same meaning as above, with a methallyl halide in the presence of an acid catalyst at −20° to 50° C. to yield a 3-halogeno-4-alkoxyneophyl halide represented by the formula (I):

(I)



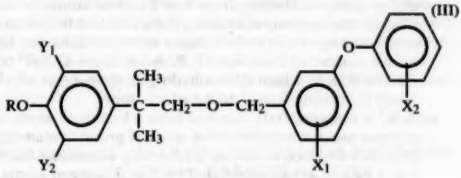
wherein Y_1, Y_2 and R have the same meaning as above and X is a halogen atom, then reacting said 3-halogeno-4-alkoxyneophenyl halide represented by the formula (I) with a 3-phenoxygenzyl alcohol represented by the formula (II):

(II)



wherein X_1 and X_2 have the same meaning as above, in the presence of a base to yield a 3-phenoxybenzyl 2-(4-alkoxy-3-halogenophenyl)-2-methyl-propyl ether represented by the formula (III):

(III)



wherein Y_1, Y_2, R, X_1 and X_2 have the same meaning as above, and then subjecting the product to a hydrodehalogenation reaction.

4,542,244

OXABICYCLOALKANE HERBICIDES

George B. Payne; Samuel B. Soloway, both of Modesto; James E. Powell, Ripon, all of Calif.; Steven A. Roman, Fulshear, Tex., and Willy D. Kollmeyer, Modesto, Calif., assignors to Shell Oil Company, Houston, Tex.

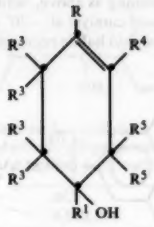
Division of Ser. No. 416,572, Sep. 13, 1982, which is a continuation-in-part of Ser. No. 331,094, Dec. 16, 1981, abandoned. This application Jun. 25, 1984, Ser. No. 624,552

Int. Cl.[4] C07C *35/18*

U.S. Cl. 568—825 **10 Claims**

1. A compound of the formula Ig

Ig



wherein

R is a hydrogen atom; or a straight-chain alkyl group containing from 1 to 6 carbon atoms;

R^1 is a hydrogen atom; an alkyl group containing from 1 to 6 carbon atoms; an alkyl group containing from 1 to 6 carbon atoms substituted by 1 to 3 halogen atoms, each having an atomic number of from 9 to 35, inclusive, a hydroxy group, a cyano group or an alkoxy group containing from 1 to 4 carbon atoms, a C_{1-6} alkylthio group, a C_{6-10} arylthio group, a C_{7-11} aralkylthio group, an azido group, a C_{1-6} alkoxycarbonyl group, a hydroxycarbonyl group, a phosphoryl group, a phosphoryloxy group, a carbamoyl group or a thiocarbamoyl group substituted by hydrogen or 1 or 2 alkyl groups containing from 1 to 6 carbon atoms; an aryl or aralkyl group, each containing from 6 to 10 carbon atoms, and 1 or 2 carbons in the alkyl portion; an aryl or aralkyl group containing from 6 to 10 carbon atoms, and 1 to 2 carbons in the alkyl portion, ring-substituted by one or more substituents independently selected from a halogen atom, each having an atomic number of from 9 to 35, inclusive, an alkyl or alkoxy group containing from 1 to 2 carbon atoms, or an alkyl or alkoxy group containing from 1 to 2 carbon atoms substituted by one or more halogen atoms, each having an atomic number of from 9 or 17; R^1 is a group $—CO_2R^6$ or $—CON(R^6)_2$ in which R^6 is a hydrogen atom, or an alkyl group containing from 1 to 6 carbon atoms;

each R^3 is independently selected from a hydrogen atom; a chlorine atom; a bromine atom; an alkyl group containing from 1 to 4 carbon atoms; an alkyl group containing from 1 to 4 carbon atoms substituted by 1 to 3 halogen atoms, each having an atomic number of from 9 to 35, inclusive; or two of R^3 when located on adjacent carbon atoms together form an epoxide ring or a carbon-carbon bond;

R^4 is a hydrogen atom; an alkyl group containing from 1 to 4 carbon atoms; or an alkyl group containing from 1 to 4 carbon atoms substituted by 1 to 3 halogen atoms having an atomic number of from 9 to 35, inclusive;

each R^5 is independently selected from a hydrogen atom; an alkyl group containing from 1 to 4 carbon atoms; an alkyl group containing 1 to 4 carbon atoms substituted by 1 to 3 halogen atoms having an atomic number of from 9 to 35, inclusive; or a hydroxy group;

and stereoisomeric forms or mixtures thereof, with the proviso that R and R^1 are not both hydrogen atoms and when R is methyl R^3, R^4 and R^5 all are hydrogen atoms, then R^1 is other than isopropyl.

4,542,245

PROCESS FOR THE PREPARATION OF 2,2,2-TRIFLUOROETHANOL

André Lecloux, Meise, and Franz Legrand, Quaregnon, both of Belgium, assignors to SOLVAY & Cie (Societe Anonyme), Brussels, Belgium

Filed Jan. 30, 1984, Ser. No. 575,219

Claims priority, application France, Feb. 2, 1983, 83 01837

Int. Cl.⁴ C07C *31/38, 29/48*

U.S. Cl. 568—842 **13 Claims**

1. Process for the preparation of 2,2,2-trifluoroethanol from 1,1-difluoroethylene comprising, reacting 1,1-difluoroethylene with an oxidizing agent selected from the group consisting of ozone, atomic oxygen and molecular oxygen in the presence of an oxidation catalyst.

4,542,246

ELECTRICAL INSULATING OIL HAVING HIGH OXIDATION STABILITY AND METHOD FOR PRODUCTION THEREOF

Atsushi Matsunaga; Sampo Kusayanagi, both of Saitama; Masamitu Takano, and Yutaka Kato, both of Akita, all of Japan, assignors to Nippon Mining Co., Ltd., Tokyo, Japan

Filed Mar. 25, 1983, Ser. No. 478,946

Claims priority, application Japan, Mar. 25, 1982, 57-46216; May 19, 1982, 57-83304; Jul. 30, 1982, 57-131908; Mar. 1, 1983, 58-31761

Int. Cl.⁴ H01B *3/22*

U.S. Cl. 585—6.6 **9 Claims**

5. A method for improving the oxygen stability of an electrical insulating oil, comprising adding

(a) an oxygen stability-improving agent for an electrical insulating oil comprising a concentrate separated from a mineral oil and containing as main components: non-basic nitrogen compounds and sulfide-type sulfur compounds, and substantially not containing basic nitrogen compounds; to

(b) a member selected from the group consisting of a refined mineral oil having a viscosity of 4 to 30 cSt at 40° C., an alkylbenzene, and a mixed oil of a refined mineral oil having a viscosity of 4 to 30 cSt at 40° C. and an alkylbenzene, to thereby increase the non-basic nitrogen content and the sulfide-type sulfur content in the resulting oil and thus maintain (i) the non-basic nitrogen content in the resulting oil at 16 to 260 ppm, (ii) the sulfide-type sulfur content in the resulting oil at 50 to 2,000 ppm, and (iii) the basic nitrogen content in the resulting oil at 6% or less based on the non-basic nitrogen content.

4,542,247

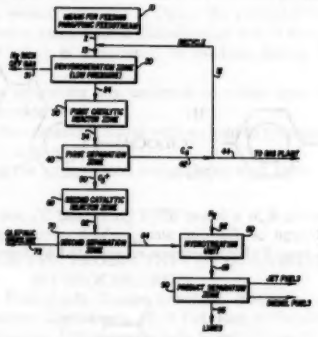
CONVERSION OF LPG HYDROCARBONS TO DISTILLATE FUELS OR LUBES USING INTEGRATION OF LPG DEHYDROGENATION AND MOGDL

Clarence D. Chang; Joe E. Penick, both of Princeton, and Richard F. Socha, Trenton, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 14, 1984, Ser. No. 650,473

Int. Cl.⁴ C07C *5/00, 1/00*

U.S. Cl. 585—254 **11 Claims**



1. A method for converting olefins by catalytic oligomerization to produce distillates and lubes which comprise the steps of:

(a) passing a paraffinic feed stream into a dehydrogenation zone at conditions of pressure and temperature which

favor conversion of paraffins to an olefin rich effluent stream comprising at least one of the group consisting of propylene and butylene;

(b) contacting said olefin rich effluent stream in a first catalytic reactor zone with a crystalline zeolite oligomerization catalyst at conditions of pressure and temperature which favor conversion of olefins to a first reactor effluent stream rich in olefinic gasoline;

(c) separating said first reactor effluent stream in a first separation zone to form a C_5^+ rich stream and a C_4^- rich stream;

(d) passing said C_5^+ rich stream to a second catalytic reactor zone;

(e) contacting said C_5^+ rich stream in said second catalytic reactor zone with a crystalline zeolite oligomerization catalyst at temperature and pressure conditions which favor production of a second reactor effluent stream which is rich in distillate;

(f) separating the second reactor effluent stream in a second separation zone to recover a olefinic gasoline stream and a distillate stream; and

(g) contacting said distillate stream with hydrogen in a hydrotreating unit to produce a hydrotreated distillate stream comprising lube range hydrocarbons.

4,542,248

PROCESS FOR THE PREPARATION OF A C_2–C_4 PARAFFIN DEHYDROGENATION CATALYST

Jacques P. Lucien, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 504,930, Jun. 16, 1983, Pat. No. 4,469,811. This application Apr. 9, 1984, Ser. No. 597,946

Claims priority, application Netherlands, Jul. 1, 1982, 8202647

Int. Cl.⁴ C07C *3/03, 5/40*; B01J *21/04*

U.S. Cl. 585—322 **11 Claims**

1. A process for dehydrogenating C_2–C_4 paraffins, characterized in that it comprises contacting said paraffins under dehydrogenation conditions with a dehydrogenation catalyst prepared by using impregnation liquors in which the platinum and/or tin compound occurs in the form of a halogen-containing compound as follows:

(a) impregnating an alumina carrier with an aqueous solution of a tin compound;

(b) calcining the composition;

(c) impregnating the composition with an aqueous solution of a platinum compound;

(d) reducing the composition;

(e) removing at least part of the halogen ions, which were introduced into the composition by using a halogen-containing platinum compound and/or tin compound in steps (a) and/or (c), by treating the composition with a non-acidic aqueous solution comprising NH_4^+ ions to provide a final catalyst containing less than 0.1% w of halogen; and

(f) impregnating the composition with a non-acidic aqueous solution of an alkali metal compound.

4,542,249

OLEFIN CONVERSIONS AND CATALYSTS

Robert E. Reusser, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 4, 1984, Ser. No. 607,051

Int. Cl.⁴ C07C *3/62*

U.S. Cl. 585—329 **19 Claims**

1. A process for the conversion of alpha-olefins to skeletal isomerization and/or disproportionation products comprising the step of contacting an alpha-olefinic feed with a catalyst composition comprising a Group IIA component deposited onto the surface of a support containing at least one of a Group VI metal and rhenium component.

4,542,250

USE OF STABILIZED PILLARED INTERLAYERED CLAYS AS CATALYST IN ALKYLATION REACTIONS

Reginald Gregory, Camberley, and David J. Westlake, Woking, both of England, assignors to The British Petroleum Company, p.l.c., London, England

Filed Jan. 4, 1983, Ser. No. 455,520

Claims priority, application United Kingdom, Jan. 9, 1982, 8200633

Int. Cl.⁴ C07C *2/68*

U.S. Cl. 585—467 **5 Claims**

1. A method for carrying out a process capable of catalysis by protons using as catalyst a cation-exchangeable solid material characterised in that

the cation-exchangeable solid material is a stabilised pillared interlayered clay, and

the process capable of catalysis by protons is a process for the production of an alkyl aromatic compound by reacting an aromatic compound with either an alcohol or an olefin.

4,542,251

OLIGOMERIZATION OF LIQUID OLEFIN OVER A NICKEL-CONTAINING SILICACEOUS CRYSTALLINE MOLECULAR SIEVE

Stephen J. Miller, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Feb. 27, 1984, Ser. No. 584,078

The portion of the term of this patent subsequent to Nov. 22, 2000, has been disclaimed.

Int. Cl.⁴ C07C *2/02*

U.S. Cl. 585—533 **15 Claims**

1. A process for oligomerizing alkenes comprising:

(a) contacting a C_2 to C_{20} olefin or mixture thereof in the liquid phase with a nickel-containing silicaceous crystalline molecular sieve selected from the group consisting of HZSM-5, HZSM-11, crystalline admixtures of HZSM-5 and HZSM-11, or mixtures thereof, at a temperature from about 45° F. to about 450° F.;

(b) recovering an effluent comprising oligomerized alkene.

4,542,252

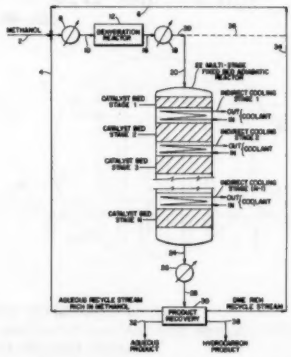
MULTI-STAGE ADIABATIC PROCESS FOR METHANOL CONVERSION TO LIGHT OLEFINS

Kenneth R. Graziani, Thorofare, and Ajit V. Sapre, West Deptford, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 20, 1984, Ser. No. 632,739

Int. Cl.⁴ C07C *1/20*

U.S. Cl. 585—640 **19 Claims**



1. In a process for converting lower aliphatic alcohols into a predominantly olefinic hydrocarbon product by (a) contacting

a feed comprising said aliphatic alcohol with a dehydration catalyst at elevated temperatures and exothermic reaction conditions effective to convert said alcohol to an ether-rich product, and (b) contacting the ether-rich product with at least a plurality of fixed beds of crystalline aluminosilicate zeolite in a sequential manner at elevated temperatures at substantially the same temperature increases across each of said fixed beds and under exothermic reaction conditions effective to convert said ether-rich product, at a predetermined conversion, to olefinic hydrocarbons, and cooling the reaction mixture effluent from each of said fixed beds, except the last, to reduce the temperature of said effluent by an amount substantially equal to the temperature increase across each fixed bed, the improvement comprising cofeeding with said ether-rich product about 0.5–3 percent by weight of a light olefin to the first of said fixed beds to stabilize the operation of said fixed beds whereby the shapes of the temperature profiles of the individual fixed beds are closer to each other allowing increased stable temperature rise in each stage.

4,542,253

USE OF PHOSPHATE AND THIOPHOSPHATE ESTERS NEUTRALIZED WITH WATER SOLUBLE AMINES AS ETHYLENE FURNACE ANTI-COKING ANTIFOULANTS

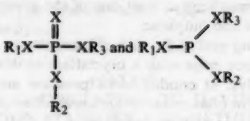
Morris Kaplan, Houston, and William A. Lindley, Sugar Land, both of Tex., assignors to Nalco Chemical Company, Oak Brook, Ill.

Continuation-in-part of Ser. No. 522,292, Aug. 11, 1983, abandoned, which is a continuation-in-part of Ser. No. 410,218, Aug. 23, 1982, abandoned. This application May 4, 1984, Ser. No. 607,052

Int. Cl.[4] C07C *11/04;* C10G *9/16*

U.S. Cl. 585—650 **8 Claims**

1. An improved method of reducing fouling and corrosion in ethylene cracking furnaces using petroleum feedstocks, the improvement comprising admixing the petroleum feedstock with at least 10 ppm of a compound chosen from the group consisting of phosphite esters, phosphate esters, thiophosphite esters, thiophosphate esters and mixtures thereof, said esters being characterized by the formulas:



where X equals S or O, and R_1, R_2, and R_3, are each independently selected from the group consisting of hydrogen, water soluble amine, alkyl, aryl, alkaryl, cycloaklyl, alkenyl, and arylalkyl group provided that in at least one and not more than two of each R_1, R_2, and R_3 are water soluble amines having partition coefficients greater than about 3.0 and at least one of R_1, R_2, and R_3 is selected from the group consisting of alkyl, aryl, alkaryl, cycloaklyl, alkenyl, and arylalkyl.

4,542,254

PROCESS FOR THE SEPARATION OF MIXTURES OF AROMATIC HYDROCARBONS INTO SINGLE COMPONENTS

Elio Santacesaria; Franco Codignola, both of Milan; Davino Gelosa, Pavia, and Sergio Carra' , Milan, all of Italy, assignors to Sisassocieta Italianaserie Acetica Sintetica, Milan, Italy

Filed May 3, 1983, Ser. No. 491,229

Claims priority, application Italy, May 4, 1982, 21059 A/82

Int. Cl.[4] C10G *25/03;* C07C *7/12*

U.S. Cl. 585—828 **8 Claims**

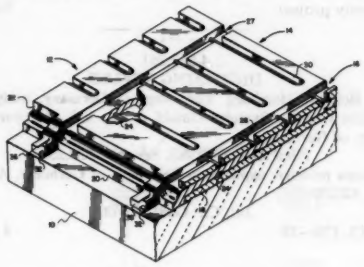
1. In a process for the separation of an aromatic hydrocarbon mixture into its single components through passage of the mixtures in the vapor phase on an adsorption bed formed of a potassium-exchanged Y zeolite, the latter being previously saturated by desorbent vapor, said aromatic hydrocarbon mixture containing either at least two xylenes or at least two xylene and ethyl benzene, the improvement comprising employing isopropylbenzene as the desorbent keeping the zeolite material bed at a temperature between 152.5° C. and 250° C., including treating the zeolite bed during the desorption phase with a feed of isopropylbenzene in the vapor phase which separates fractions of the pure components except for the presence of the desorbent and fractions formed of mixtures of two or more of said components in presence of the desorbent, the amount of desorbent required to effect said separation being less than the amount of toluene required to give the same separation.

4,542,255

GRIDDED THIN FILM SOLAR CELL

David P. Tanner, Thousand Oaks; Don L. Morel, Agoura Hills, and Robert R. Gay, Granada Hills, all of Calif., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jan. 3, 1984, Ser. No. 567,601
Int. Cl.[4] H01L *31/06*
U.S. Cl. 136—249 1 Claim



1. In a photovoltaic solar module having a plurality of series connected cells interconnected on a single glass substrate wherein each cell comprises a first conductor layer deposited on said substrate, a thin film semiconductor layer deposited on said first conductor layer and a second conductor layer deposited on said semiconductor layer and wherein said second conductor layer of each cell is in ohmic contact with the first conductor layer of an adjacent cell and where at least one of said first and second conductor layers is transparent, the improvement comprising:

a plurality of first metallic conductor strips deposited on said at least one transparent conductor layer of each cell, said plurality of strips positioned substantially normal to one edge of said one transparent conductor layer and originating at said one edge thereof; and

a second metallic conductor strip deposited on said at least one transparent conductor layer of each cell, said second strip positioned along said one edge and interconnecting one end of each of said plurality of first strips;

wherein said second metallic conductor strip of each cell extends laterally onto said substrate from said cells, the other of said first and second conductor layers of each cell extends laterally on said substrate from said cells, the semiconductor layer is a continuous unpatterned sheet for all cells, and interconnection between adjacent cells is made by contacting the extended portion of said second metallic conductor strips of a first cell with the extended portion of said other conductor of an adjacent cell at a point on said substrate laterally displaced from said semiconductor sheet.

4,542,256

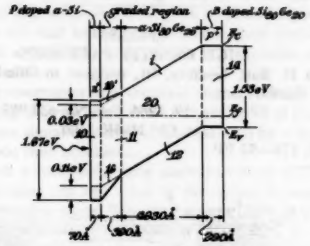
GRADED AFFINITY PHOTOVOLTAIC CELL

Scott Wiedeman, Levittown, Pa., assignor to University of Delaware, Newark, Del.

Filed Apr. 27, 1984, Ser. No. 604,786
Int. Cl.[4] H01L *31/06, 31/18*
U.S. Cl. 136—249 8 Claims

1. An improved photovoltaic cell comprising at least a front electrically conductive layer upon which radiation is incident and a back electrically conductive layer, between which is sandwiched a primary light-absorbing layer of substantially intrinsic amorphous semiconducting material displaying low photogenerated carrier mobility below about 50 cm^2/Volt-second, the constitution of said primary light-absorbing layer being fabricated to provide an affinity gradient at one end of said primary light-absorbing layer adjacent one of said front and back electrically conductive layers for reducing back diffusion of a preselected species of photogenerated carrier chosen from electrons and holes to thereby reduce non-productive recombination with carriers of opposite type.

3. An improved photovoltaic cell according to claim 1 comprising at least two primary light-absorbing layers in tandem



wherein at least one of said primary light-absorbing layers is provided with an appropriate affinity gradient to thereby prevent non-productive recombination with carriers of opposite type.

4,542,257

SOLAR CELL ARRAY PANEL AND METHOD OF MANUFACTURE

Allister F. Fraser, Thousand Oaks, Calif., and Walter G. Alsbach, McLean, Va., assignors to Hughes Aircraft Company, El Segundo, Calif. and International Telecommunications Satellite Organization, Washington, D.C.

Filed Apr. 27, 1984, Ser. No. 604,548
Int. Cl.[4] H01L *31/04, 31/18*
U.S. Cl. 136—251 25 Claims

1. An integral solar cell panel comprising a plurality of interconnected solar cells attached to a fiber-reinforced polyimide film substrate, wherein said solar cells are bonded to the surface of said polyimide film by the final curing of said polyimide.

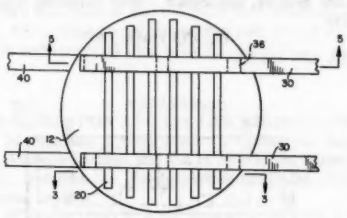
2. The solar panel of claim 1 which further includes a transparent protective polymer coating on the front surface of said solar cells.

4,542,258

BUS BAR INTERCONNECT FOR A SOLAR CELL

Robert W. Francis, New York, N.Y.; Joseph D. Napoli, Windham, N.H., and Hsue C. Tsien, Chatham Township, Morris County, N.J., assignors to Solarex Corporation, Chicago, Ill.

Filed May 28, 1982, Ser. No. 383,221
Int. Cl.[4] H01L *31/04, 31/18*
U.S. Cl. 136—256 11 Claims



1. A solar cell assembly including:

a solar cell having a surface with an electrically conductive pattern disposed thereon;

at least one bus bar disposed adjacent to said conductive pattern; and

means for attaching said bus bar to said solar cell including

at least one segment of adhesive material disposed between said bus bar and said surface of said solar cell and a dip-soldered electrical and physical connection formed between said bus bar and said conductive pattern adjacent said adhesive material.

4,542,259

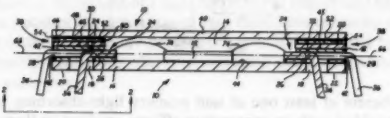
HIGH DENSITY PACKAGES

Sheldon H. Butt, Godfrey, Ill., assignor to Olin Corporation, New Haven, Conn.

Filed Sep. 19, 1984, Ser. No. 651,985

Int. Cl.⁴ H05K *5/06*

U.S. Cl. 174—52 FP **47 Claims**



1. A high density package forming an enclosure for receiving an electronic device, comprising:

a metal or metal alloy base member, said base member having a plurality of openings extending therethrough being disposed adjacent at least two opposing sides thereof;

a metal or metal alloy lead frame having a first surface disposed adjacent said base member, said lead frame having first and second rows of leads extending from at least two opposing sides thereof, each of said first and second rows including a plurality of leads;

a metal or metal alloy seal ring member disposed adjacent a second surface of said lead frame;

said lead frame being disposed so that each of said plurality of leads in said first row extends through one of said plurality of openings in said base member external to said package and each of said plurality of leads in said second row extends between said base member and said seal ring member external to said package;

a metal or metal alloy cover member disposed adjacent said seal ring member; and

means for sealing said enclosure, the seal means disposed between said base member and said lead frame, between said lead frame and said seal ring member and between said seal ring member and said cover member.

4,542,260

ENCAPSULATED ASSEMBLIES

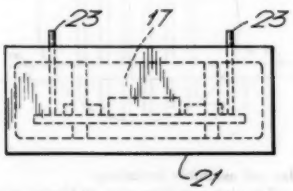
David W. Pearce, Avon, England, assignor to GEC Avionics Limited, England

Filed Aug. 31, 1984, Ser. No. 646,905

Claims priority, application United Kingdom, Sep. 5, 1983, 8323755

Int. Cl.⁴ H05K *5/00*

U.S. Cl. 174—52 PE **6 Claims**



1. An encapsulated assembly comprising electric components on a board; support pillars mounted on and projecting outwardly from at least one of the major surfaces of the board; connector pins for the components extending outwardly from the board; a mass of foamed silicone rubber encapsulating the board and components so that the outer ends of the support pillars are substantially flush with the surface of the mass and the ends of the connector pins extend outwardly beyond the surface of the mass; and a mass of substantially rigid epoxy resin compound encapsulating said foamed rubber mass from which resin compound mass the outer ends of the connector pins only project.

4,542,261

DIGITIZING STYLUS

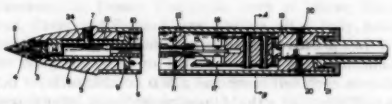
Gert Behnke, Hamburg, Fed. Rep. of Germany, assignor to Aristo Graphic Systeme GmbH & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Aug. 15, 1983, Ser. No. 523,259

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1982, 8222962[U]

Int. Cl.⁴ G08C *21/00*

U.S. Cl. 178—18 **4 Claims**



1. In a digitizing stylus of the type having a holder shaft comprised of a front part and a tubular part and elongated in an axial direction and a contacting pin of ferromagnetic material movable in the axial direction within said front part of the stylus and counter to spring force, in a manner where said movement is limited in the axial direction, and the contacting pin has an inner end area which is oriented toward the tubular part and extends for said movement through the central opening of a toroid coil and is coupled with a switching device, whereupon the movement of the contacting pin into the shaft closes a current circuit for the toroid coil, wherein the improvement comprises, in combination, a toroid coil (3) which axially moves together with a contacting pin (2) characterized by the contacting pin (2) and toroid coil (3) being integrally cast within a plastic body (4), said plastic body having an inner end in contact with an actuation body (8), said actuation body having an inner end comprising an annular flange (9) supporting one end of a compression spring (11), with another end of the spring resting upon an annular body (12) which is held stationary with respect to said tubular part, a switching device which closes at a first axial position of said actuation body, prior to an inwardmost stop position and remains closed during further inward movement to a second axial position, at said inwardmost stop.

4,542,262

SUBSCRIBER TELEPHONE STATION

Günter Ruff, Auenwald, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 10, 1981, Ser. No. 320,060

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1980, 3042610

Int. Cl.⁴ H04Q *7/04*

U.S. Cl. 179—2 E **8 Claims**

1. A subscriber telephone station in a dial telephone network, comprising:

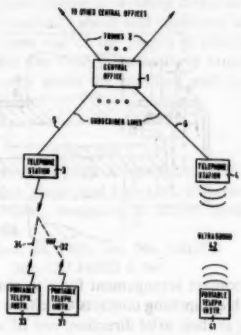
a main subscriber instrument connected by wire into the network, said main subscriber instrument including an automatic dialing device;

a portable second instrument, said portable second instrument including

a keyboard;

a display; and

an electronic timing device packaged with said keyboard and display in the form of a watch, said electronic timing device being coupled to said keyboard and display to provide switchable alarm and pocket calculator functions, a phone number to be called, an alarm time and numbers and operations for calculator functions being inputted into said electronic timing device by means of said keyboard; and



communications means employing a medium consisting of one of radio, ultrasound and light energy for establishing wireless signal transmission and reception between said main subscriber instrument and said portable second instrument for connection of said second instrument into said network for communication with other instruments connected to said network, said communications means operating at a plurality of selectable operating frequencies and media whereby adjacent subscribers are provided with at least one of different, fixed operating frequencies and media.

4,542,263

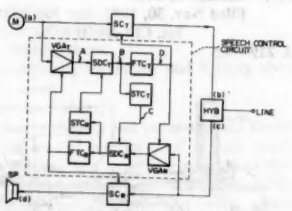
SPEECH CONTROL CIRCUIT

Tokiyoshi Mitani, Tokyo, Japan, assignor to OKI Electric Industry Co., Ltd., Tokyo, Japan

Filed Mar. 7, 1984, Ser. No. 587,240

Int. Cl.[4] H04M *1/60*

U.S. Cl. 179—81 B **6 Claims**



1. A speech control circuit for a telephone set having at least a microphone (M), a transmission switching circuit (SC_T) coupled with the output of the microphone (M), a speaker (SP), a reception switching circuit (SC_R), the output of which is coupled with said speaker (SP), a hybrid circuit (HYB) coupled with the output of said transmission switching circuit (SC_T), said reception switching circuit (SC_R) and a line, and a speech control circuit for controlling switching of said transmission switching circuit (SC_T) and said reception switching circuit (SC_R), characterized in that

said speech control circuit comprises

a transmission variable gain amplifier (VGA_T) coupled with the output of said microphone (M),

a transmission signal detecting circuit (SDC_T) coupled with the output of said transmission variable gain amplifier (VGA_T) for detecting a signal from said microphone (M) when the level of an amplified signal therefrom via said transmission variable gain amplifier exceeds a threshold level which is switchable between two levels,

a first transmission time constant circuit (FTC_T) for prolonging the rear edge of an output signal of said transmission signal detecting circuit (SDC_T) by a first transmission time constant t_{t1},

a second transmission time constant circuit (STC_T) for prolonging the rear edge of the output signal of said transmission signal detecting circuit (SDC_T) by a second transmission time constant t_{t2},

a reception variable gain amplifier (VGA_R) coupled with the output of said hybrid circuit (HYB) associated with the reception channel,

a reception signal detecting circuit (SDC_R) coupled with the output of said reception variable gain amplifier (VGA_R) for detecting a signal from said hybrid circuit (HYB) when the level of an amplifier signal therefrom via said reception variable gain amplifier exceeds a threshold level which is switchable between two levels,

a first reception time constant circuit (FTC_R) for prolonging the rear edge of an output signal of said reception signal detecting circuit (SDC_R) by a first reception time constant t_{r1}, and

a second reception time constant circuit (STC_R) for prolonging the rear edge of the output signal of said reception signal detecting circuit (SDC_R) by a second reception time constant t_{r2},

said transmission switching circuit (SC_T) being switched by the output signal of said first transmission time constant circuit (FTC_T),

said reception switching circuit (SC_R) being switched by the output signal of said first reception time constant circuit (FTC_R),

the gain of said transmission variable gain amplifier (VGA_T) being adjusted by the output signal of said first reception time constant circuit (FTC_R),

the gain of said reception variable gain amplifier (VGA_R) being adjusted by the output signal of said first transmission time constant circuit (FTC_T),

said threshold level of said transmission signal detecting circuit (SDC_T) being controlled by the output signal of said second reception time constant circuit (STC_R),

said threshold level of said reception signal detecting circuit (SDC_R) being controlled by the output signal of said second transmission time constant circuit (STC_T),

said first transmission and reception time constants t_{t1} and t_{r1}, being respectively longer than said second transmission and reception time constants t_{t2} and t_{r2}.

4,542,264

LEAD-FRAME FOR AN ELECTRIC MICROPHONE

Henning M. Schmidt, Tyresö; Hans G. Malmkvist, Enskede; Arvi J. Aksberg, Lidingö, and Jan H. Johansson, Bålsta, all of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

PCT No. PCT/SE82/00318, § 371 Date May 19, 1983, § 102(e) Date May 19, 1983, PCT Pub. No. WO83/01362, PCT Pub. Date Apr. 14, 1983

PCT Filed Oct. 6, 1982, Ser. No. 499,149

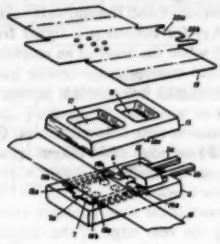
Claims priority, application Sweden, Oct. 7, 1981, 8105913

Int. Cl.[4] H04R *19/01*

U.S. Cl. 179—111 E **12 Claims**

7. A lead frame for an electret microphone comprising an H-shaped structure of thin metallic material including spaced

parallel legs and a crossbar therebetween, a first plate spaced from said crossbar and located between said legs, a lead con-



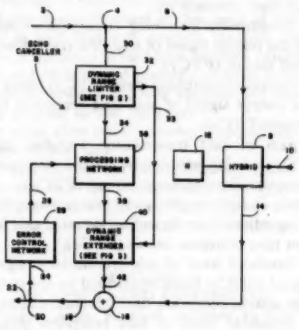
necting said first plate to said crossbar, a second plate spaced from said first plate, and a lead connecting said plates.

4,542,265

ECHO CANCELLER DYNAMIC RANGE EXTENSION

Douglas M. Brady, Boulder, Colo., assignor to GTE Lenkurt Incorporated, Phoenix, Ariz.

Filed May 20, 1983, Ser. No. 496,730
Int. Cl.⁴ H04B *3/20*
U.S. Cl. 179—170.2 **3 Claims**



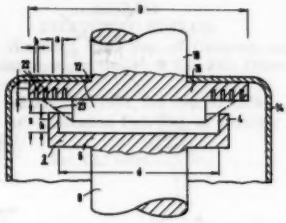
1. In a communication circuit which includes a four-wire to two-wire transition, a transmitting path and a receiving path in the four-wire circuit, an echo canceller interposed between said transmitting and receiving paths so as to adapt the signals passing along said transmitting and receiving paths into an echo replica for differential combination with signals passing along said transmitting path, apparatus for improving echo return loss enhancement comprising: first means for limiting the dynamic range of received signals before they enter processing means in the echo canceller for generating the echo replica, and for recovering the dynamic range subsequent thereto, whereby echo return loss enhancement is improved; said first means comprising: a dynamic range limiter interposed between an input to the processing means and said receiving path, so as to limit the dynamic range of signals to be adapted; and a dynamic range extender interposed between the output of the processing means and a combining means so as to restore the dynamic range of the echo replica at the output of said extender.

4,542,266

CONTACT ARRANGEMENT FOR VACUUM SWITCHES

Heinrich Haessler, and Wilfried Kuhl, both of Wendelstein, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jan. 20, 1984, Ser. No. 572,725
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1983, 3302201
Int. Cl.⁴ H01H *33/66*
U.S. Cl. 200—144 B **14 Claims**



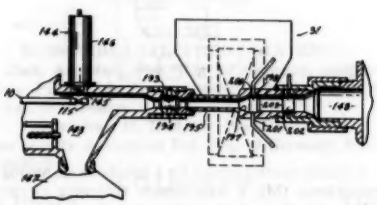
1. In a contact arrangement for a vacuum switch, the vacuum switch comprising contacts which are movable relative to each other in their axial direction, one of said contacts having a recessed area and designed as a recessed contact having a sidewall contiguous and extending above the periphery of the recessed area a distance defining a predetermined inner height and the predetermined inner height of the sidewall being greater than a contact stroke (h) of the contacts, said sidewall partly surrounding the other contact of said contacts when the vacuum switch is open, the other contact including a protruding contact portion which is adapted to extend into the base of the recessed area to make contact upon closure of the vacuum switch and a condensation plate extending outward from a base region of the protruding contact portion and located between said other contact and its current lead whose diameter (D) is greater than the inside diameter (d) of the recessed area of said recessed contact.

4,542,267

AUTOMATED CLOSURE SYSTEM FOR NUCLEAR REACTOR FUEL ASSEMBLIES

David W. Christiansen, Kennewick, and William F. Brown, West Richland, both of Wash., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 30, 1982, Ser. No. 445,620
Int. Cl.⁴ H05B *6/10*
U.S. Cl. 219—9.5 **3 Claims**



1. An automated closure system for nuclear reactor fuel assemblies, comprising:

a sealable enclosure in the form of a double-ended hollow cylindrical tube having an inner diameter capable of receiving a length of cladding;

transport means for coaxially positioning a length of clad-

ding within said tube by axially shifting an outer open end of the length of cladding through one end of the tube;

means movably mounted relative to the remaining end of the tube for placing a ring of curie metal coaxially about the outer open end of the length of cladding within the tube;

end cap loading means movably mounted relative to the remaining end of the tube for coaxially positioning an end cap partially within the outer open end of the length of cladding while positioned within the tube;

and cylindrical pulsed magnetic welding means arranged in a fixed position coaxially about said enclosure, adapted to seal the outer open end of the length of cladding while positioned within the tube by selectively collapsing the ring of curie metal about the cladding and the end cap positioned within it.

4,542,268

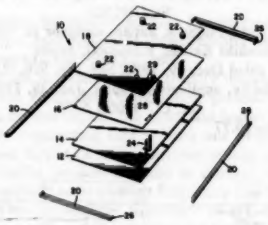
BROWNING HEATER FOR A MICROWAVE OVEN

George A. Jarvis, New Hope, and Larry M. Sivertson, Golden Valley, both of Minn., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed Jan. 28, 1980, Ser. No. 116,073

Int. Cl.[4] H05B *6/64*

U.S. Cl. 219—10.55 B **15 Claims**



1. A microwave browning oven comprising:

a metallic cavity having interior surfaces comprising walls and an interior roof;

a microwave generating device;

a means for communicating microwaves from said device into said cavity;

an infrared heater mounted on the interior roof of said cavity;

said heater including:

a metallic cover sheet;

a resistance heating sheet;

means for electrically insulating said heating sheet from said cover sheet;

a thermal insulator sheet;

means for closely binding and mounting said sheets in the order listed on the interior roof of said cavity, said means for binding and mounting adapted to shield said resistance heating sheet from said microwaves, such that said heater projects into said cavity substantially only the thickness of said sheets as bound.

4,542,269

COOKING APPLIANCE WITH SWITCHING ASSEMBLY

Yasuhiro Sakoda, Wakayama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 19, 1984, Ser. No. 602,166

Claims priority, application Japan, Apr. 26, 1983, 58-75926

Int. Cl.[4] H05B *6/68*

U.S. Cl. 219—10.55 C **4 Claims**

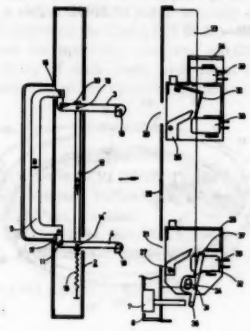
1. A heating apparatus comprising

an oven housing and a door for opening and closing said oven housing, said door being provided with a latch mechanism for securing the door to said oven housing,

means for heating an object in said oven housing

a heating button provided on said oven housing for activating said heating means,

a common switch disposed in said oven housing which functions as a safety switch for insuring the secure closing



of the oven door, and as a heating switch for activating said heating means in response to the operation of the heating button, and

an operating element in operable communication with both the heating button and the common switch whereby when the door is closed in the housing and the heating button is activated, the operating element lockingly engages the latch mechanism and activates said heating means.

4,542,270

SLIPPING CONNECTOR ASSEMBLY FOR APPLICATION TO MICROWAVE OVEN

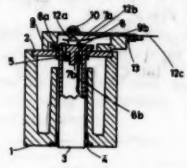
Yuzi Ando, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 14, 1983, Ser. No. 542,209

Claims priority, application Japan, Oct. 15, 1982, 57-156575[U]

Int. Cl.[4] H05B *6/68*

U.S. Cl. 219—10.55 B **5 Claims**



1. In a microwave oven which utilizes a turntable to rotate food being cooked in a cooking chamber and a temperature sensing probe in contact with the food, output terminals of the probe being connected to a slipping connector assembly, said slipping connector assembly comprising:

a slip connector including mobile contacts connected to said output terminals of said temperature sensing probe and stationary contacts having continuous points of contact with said mobile contacts and with a control circuit of said microwave oven; and

an air-tight shielding case that shields said points of contact between said mobile and stationary contacts of said slip connector from the atmosphere inside the cooking chamber of the oven.

4,542,271

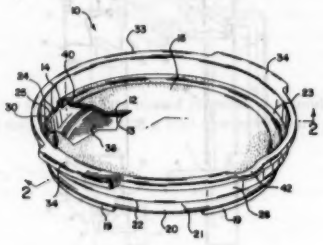
MICROWAVE BROWNING WARES AND METHOD FOR THE MANUFACTURE THEREOF

David R. Tanonis, West Lafayette, Ind., and Alexander L. Darbut, Minneapolis, Minn., assignors to Rubbermaid Incorporated, Wooster, Ohio and Polymer Engineering Inc., Reynolds, Ind.

Continuation-in-part of Ser. No. 658,140, Oct. 5, 1984, abandoned. This application Jan. 14, 1985, Ser. No. 691,442

Int. Cl.[4] H05B *6/64*

U.S. Cl. 219—10.55 E **54 Claims**



1. A microwave browning ware comprising:

a body formed of a member transparent to microwave energy having a base and a sidewall, said sidewall carrying an inwardly directed shelf;

a metallic pan having an upper cooking surface and a lower surface said pan providing an edge adapted to be supported by said shelf and maintain a clearance from said sidewall;

a heating matrix absorbent to microwave energy cured to said lower surface of said metallic pan comprising:

100 parts by weight of a plastic matrix and from about 100 to about 500 parts per 100 parts of plastic matrix of magnetite particles dispersed evenly throughout said plastic matrix;

a binder material located between said edge of said pan and said shelf capable of withstanding the heat from said metallic pan without melting or degrading, resulting from the absorption of microwave energy by said heating matrix; and

a cavity formed between said metallic pan and said base, said heating matrix being housed therein.

4,542,272

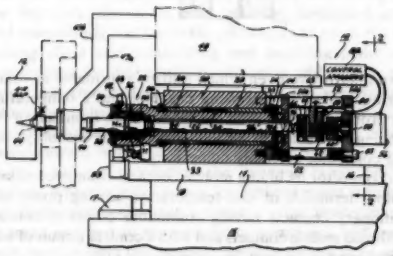
INDUCTION HEATING DEVICE WITH ELECTRONIC POSITIONING CONTROL

Kenneth G. Hubbard, Merseyside, England, assignor to The Cross Company, Fraser, Mich.

Continuation-in-part of Ser. No. 425,988, Sep. 28, 1982, abandoned. This application Feb. 22, 1984, Ser. No. 582,290

Int. Cl.[4] H05B *6/10*

U.S. Cl. 219—10.57 **9 Claims**



1. An induction heating apparatus comprising a base, a slide mounted on said base for movement in an axial path of travel toward and away from the workpiece to be heated, an inductor supported by said slide for axial movement relative to said slide, biasing means urging said inductor forwardly on said slide, actuator means, coupling means including first and second coupling members connected respectively to said actuator means and said inductor and releasably engaged by said bias means, said first and second members when engaged arranged to couple said inductor to said actuator means so that energization of said actuator means will produce axial movement of said inductor relative to said slide only in a direction away from said workpiece, means for moving said slide in a direction to move said inductor into engagement with the workpiece and shift said inductor relative to said slide against said biasing means to thereby disengage said coupling means first and second members, measuring means connected to measure the extent of relative motion between said first and second members and generate a signal corresponding thereto, control means connected to receive said signal from said measuring means and energize said actuator means for moving said coupling means first member so as to reengage said first and second members and then move said first and second members and inductor an additional distance for moving said inductor a predetermined amount to space it the desired distance from the workpiece.

4,542,273

CIRCUIT FOR INDUCTIVE HEATING APPARATUS WITH MULTIPLE HIGH FREQUENCY ENERGY SOURCES

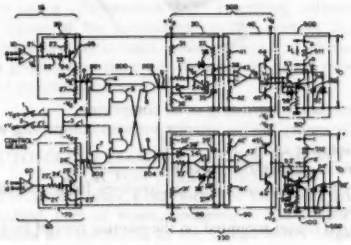
Hidetoshi Hirata, Nagoya, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 29, 1983, Ser. No. 566,783

Claims priority, application Japan, Jan. 28, 1983, 58-12515

Int. Cl.[4] H05B *6/06*

U.S. Cl. 219—10.77 **10 Claims**



1. A circuit for an inductive heating apparatus with multiple high frequency energy sources comprising:

(a) plural resonant circuit means, each including an inductive heating coil coupled with a magnetic load, a capacitor connected in series to said coil, and an on-off switching device connected in parallel to said capacitor, for generating high frequency signals respectively;

(b) a plurality of trigger circuit means, one trigger circuit means associated with each resonant circuit for detecting resonant current through an associated coil and for generating trigger pulses in response to said resonant current;

(c) a control means, including plural input terminals connecting to operating switches, and output terminals, for producing control pulse signals according to an operating-sequence of said operating switches for actuating said resonant circuits;

(d) a logic circuit means, connected to said plurality of trigger circuit means and said control means, for producing the same trigger signal to plural output terminals thereof in response, at least in part, to said control pulse signals; and

(e) a plurality of drive circuit means, one drive circuit means

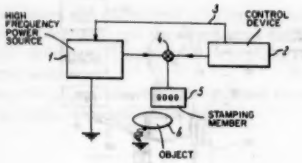
connected to each of the output terminals of said logic circuit means, for operating said on-off switching devices so that said plural resonant circuit means operate at the same high frequency.

4,542,274

DEVICE FOR APPLYING SYMBOLS TO PROTEIN-CONTAINING MATERIAL

Johannes J. M. van Elsen, Dr. Kuyperlaan 9, 3445 CK Woerden, Netherlands

Filed Feb. 10, 1983, Ser. No. 465,653
Int. Cl.⁴ H05B *6/46*
U.S. Cl. 219—10.81 **20 Claims**



1. An apparatus for rapidly applying marking symbols to protein-containing tissue of an animal, said apparatus comprising:

generator means for generating high frequency electromagnetic energy, said generator means having an output for said electromagnetic energy; and

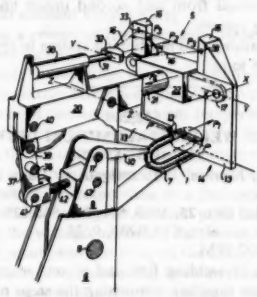
stamping means including an electrically insulating holder, at least one electrically conductive protruding portion supported by and protruding from said holder, and means electrically connecting said at least one protruding portion to said output of said generator means, said at least one protruding portion adapted to contact the protein-containing tissue to send high frequency electromagnetic energy to said tissue, the frequency of said electromagnetic energy being chosen to alter the protein structure of said tissue, and to mark the tissue with a symbol, while said stamping means remains cool in use.

4,542,275

ELECTRICAL CHAIN WELDING MACHINE

Olof I. Andreasson, Tegen 2535, S-458 02 Ödeborg, Sweden

Filed Mar. 24, 1983, Ser. No. 478,535
Claims priority, application Sweden, Mar. 26, 1982, 8201960
Int. Cl.⁴ B23K *11/32*
U.S. Cl. 219—51 **10 Claims**



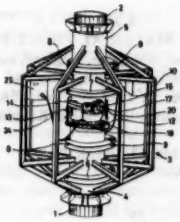
1. A chain welding machine comprising: two mutually opposing upsetting bars for engaging opposite arcuate portions of a pre-shaped open chain link having two spaced legs, and means for displacing the legs toward each other in upsetting direction, and in a direction transverse thereto, into mutual contact at a welding zone in a central upsetting plane, and for altering the angular attitude of the legs with respect to each other, separate electrodes on either side of the welding zone, said electrodes having associated holders forming a clamp with two arms having two opposing electrode jaws for gripping a respective link leg, means for supporting and guiding the arms of the clamp for pivoting about a pre-determined axis for symmetrical pivoting relative to the upsetting plane of the clamp arms about a respective first axis essentially parallel to the longitudinal direction of the chain link at a predetermined equal distance from the upsetting plan and parallel to said plane; and for pivoting of each clamp arm about a common second axis perpendicular to the upsetting plane and intersecting said first axis.

4,542,276

DEVICE FOR WELDING TUBES

Arie P. van den Berg, Mildam, Netherlands, assignor to Mantra Tube Ltd., St. Peter Port, England

Filed Jan. 19, 1984, Ser. No. 572,674
Claims priority, application Netherlands, Jan. 20, 1983, 8300207
Int. Cl.⁴ B23K *37/02, 9/225*
U.S. Cl. 219—60 A **16 Claims**



1. A device for welding two tubes end-to-end comprising:

a pair of coaxial sleeves, a rigid framework defining a cage for supporting said sleeves in axially spaced apart relationship, each sleeve being adapted to surround one tube and being provided with clamping means adapted to hold the tube in axial alignment with a second tube held in the other sleeve while maintaining a gap between the ends of the two tubes, with the gap lying between said sleeves;

guide means within said cage for guiding at least one welding electrode assembly along a circular path coaxial with said sleeves and contained in a plane lying between and perpendicular to said sleeves for depositing a weld seam within the gap between the tubes clamped in said sleeves;

the inner transverse dimensions of said cage in the plane of said circular path being substantially greater than the inner diameter of said sleeves.

4,542,277

RESISTANCE SPOT WELDING GUN WITH WELD QUALITY DETECTION FEATURE

Dimitrios G. Cecil, 1277 Ashover Dr., Bloomfield Hills, Mich. 48013

Filed May 29, 1984, Ser. No. 614,797
Int. Cl.⁴ B23K *11/24*
U.S. Cl. 219—109 **17 Claims**

3. Apparatus for detecting weld nugget growth on workpieces during a welding operation using a resistance spot welding gun, said apparatus comprising:

a cylinder having a piston rod slidably mounted therein;

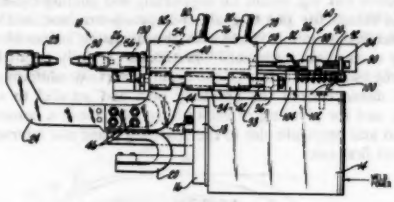
first and second electrodes;

first means for connecting the piston rod to said first electrode;

second means for causing said piston rod to move under

fluid pressure within the cylinder in a first direction to move at least the first electrode against a surface of one of the workpieces toward the second electrode;

third means for applying power to the electrodes to begin the welding operation; and



fourth means for sensing the difference between the relative spacing of the electrodes at a position of maximum penetration into the workpieces and at a position when the electrodes have subsequently separated from each other due to weld nugget growth between the workpieces, with said fourth means using at least in part a measurement of the movement of the piston rod to detect said difference.

4,542,278

LASER MATERIAL PROCESSOR

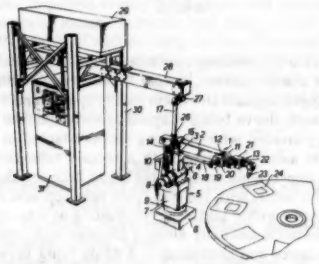
Arthur F. D. S. Taylor, Abingdon, England, assignor to Flexible Laser Systems Limited, Cheshire, England

Filed Dec. 5, 1983, Ser. No. 558,356

Claims priority, application United Kingdom, Dec. 6, 1982, 8234681

Int. Cl.[4] B23K *26/02*

U.S. Cl. 219—121 LV **8 Claims**



1. Apparatus for carrying out materials processing operations, comprising an industrial robot assembly including an arm one end of which is pivotally connected to a pedestal assembly, and a second end of which has a pivotally-mounted working head including a laser beam focusing assembly the axes about which the arm of the industrial robot and the working head rotate being parallel to each other, a laser beam guide assembly mounted on the arm of the industrial robot having a first optical elbow assembly mounted so that an optical axis is coincident with the axis of rotation of the first end of the arm of the industrial robot and arranged to direct an incoming beam of laser radiation from a fixed laser source in a direction parallel to the longitudinal axis of the arm of the industrial robot to a second optical elbow assembly mounted with an optical axis coincident with that about which the working head pivots and arranged to direct the laser beam to a third optical elbow assembly which forms part of the working head and has an optical axis co-planar with that of the second optical elbow assembly but orthogonal to it and arranged to direct the laser beam to the laser beam focusing assembly, the said optical elbow assemblies being adapted to permit rotational motion about the said optical axes without affecting the alignment of the laser beam.

4,542,279

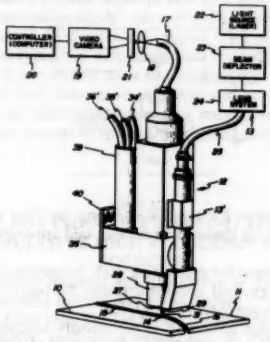
MICROVECTOR CONTROL FOR EDGE AND JOINT FOLLOWING

Allen W. Case, Jr., Amsterdam; Carl G. Ringwall, and Michael L. Pollick, both of Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 7, 1983, Ser. No. 472,796

Int. Cl.[4] B23K *9/12*

U.S. Cl. 219—124.34 **12 Claims**



1. A method of controlling an arc welding torch and positioning system to track a joint in a workpiece to be welded, said arc welding torch having a light projector and an integral puddle view optical system, comprising the steps of:

during the welding operation projecting a structured light pattern onto said workpieces and joint close to the weld puddle and producing images thereof with said integral optical system that are transmitted to a video camera and hence to a controller;

computing a first move microvector from known positioning system parameters;

capturing a first image and executing said first move while computing a second move microvector using parameters determined from said first image and from said positioning system;

capturing a second image and executing said second move while computing a third move microvector using parameters determined from said second image and from said positioning system;

said moves causing said positioning system to approximately follow said joint.

4,542,280

METHOD OF WELDING ALUMINUM DRIVESHAFT COMPONENTS

Samuel Simons, Marion, Ind., assignor to Dana Corporation, Toledo, Ohio

Filed Oct. 25, 1983, Ser. No. 545,125

Int. Cl.[4] B23K *9/23*

U.S. Cl. 219—137 WM **8 Claims**

1. A method of welding first and second aluminum drive shaft components together comprising the steps of:

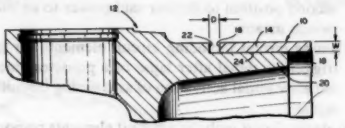
(a) firming the first component with a hollow cylindrical end portion having an inside diameter and terminating in a flat radially-extending end surface;

(b) forming the second component with a cylindrical end portion extending a. ially from a flat radially-extending shoulder and having a constant outside diameter which is

approximately equal to the inside diameter of the cylindrical end portion of the first component;

(c) positioning the cylindrical end portion of the first component telescopically about a portion of the cylindrical end portion of the second component such that a predetermined distance is maintained between the end surface of the first component and the shoulder of the second component defining a longitudinally-extending annular gap therebetween; and

(d) filling the gap with a welding compound to weld the first and second components together.



4,542,281

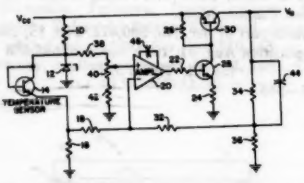
THERMAL PRINTER CONTRAST CONTROL

Leslie L. Thompson, Macedon, N.Y., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Mar. 2, 1984, Ser. No. 585,724

Int. Cl.[4] H05B *1/02;* **B41J** *3/20;* **G01D** *15/10*

U.S. Cl. 219—216 **8 Claims**



7. A method for controlling voltage and hence power delivered to a thermal print head heater in response to variations in the ambient temperature surrounding the thermal print head heater, comprising the steps of:

(a) continuously sensing the ambient temperature surrounding the thermal print head heater;

(b) continuously generating a voltage signal representative of the sensed ambient temperature;

(c) establishing a nonground temperature independent voltage reference signal;

(d) continuously comparing the nonground temperature independent voltage reference signal to the voltage signal representative of the sensed ambient temperature, resulting in a compared voltage signal;

(e) increasing the voltage and hence the power delivered to the thermal print head heater upon the compared voltage signal increasing, corresponding to a decreasing ambient temperature surrounding the thermal print head heater;

(f) decreasing the voltage and hence the power delivered to the thermal print head heater upon the compared voltage signal decreasing, corresponding to an increasing ambient temperature surrounding the thermal print head heater;

(g) maintaining the voltage and hence the power delivered to the thermal print head heater constant upon the compared voltage signal remaining constant, corresponding to a stabilized ambient temperature surrounding the thermal print head heater; and

(h) repeating step (e) through (g) as required.

4,542,282

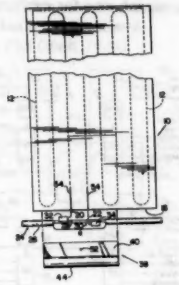
HEATING PANEL ASSEMBLY WITH IMPROVED ELECTRICAL CONNECTION MEANS

Joseph L. Brasky, 15 Tower Hill Rd., Killingworth, Conn. 06417

Continuation-in-part of Ser. No. 351,610, Feb. 23, 1982,. This application May 14, 1984, Ser. No. 609,733

Int. Cl.[4] H05B *1/00;* **H02G** *3/00*

U.S. Cl. 219—345 **20 Claims**



1. An electrical heating panel assembly comprising a relatively thin and generally planar panel having at least one edge surface and opposite side surfaces which are generally planar and which intersect said edge surface substantially at right angles, said panel carrying a length of electrical resistance heating wire and a pair of cold leads connected with the heating wire and projecting from said edge surface, an insulated multiple-conductor power line assembly extending along and adjacent said panel edge surface and having at least a portion of its outer insulation removed, means connecting said cold leads respectively with a pair of said multiple power line conductors at said outer insulation free portion of said power line, a generally U-shaped multi-purpose closure member having an enlarged parti-cylindrical body portion with a gap approximately equal to the thickness of the panel edge surface, and integral thin generally planar and parallel leg portions adapted respectively to slidably engage said opposite panel side surfaces and in assembled position to cooperatively embrace the heating panel adjacent said edge surface, the parti-cylindrical body portion of the closure member being spaced from the edge surface of the panel and cooperating therewith to define an open end substantially cylindrical tubular enclosure with said edge surface substantially completing said cylindrical configuration, said enclosure being adapted to receive said outer insulation free power line portion, said cold leads, and said connecting means, attachment and abutment means for securing and positioning said closure member in assembly with its legs embracing the panel and with its body defining a substantially cylindrical enclosure in cooperation with the panel edge surface, and means for electrically insulating at least each of the open ends of said cylindrical tubular enclosure formed by said closure member and panel edge surface.

4,542,283

ELECTRICAL HEAT LOSS CONTROL FOR BUILDING PERIMETER EMPLOYING PLURAL HEATERS

Jacques T. Leverenz, 1014 Pontiac, Wilmette, Ill. 60091

Filed Mar. 22, 1984, Ser. No. 592,380

Int. Cl.[4] H05B *1/02*

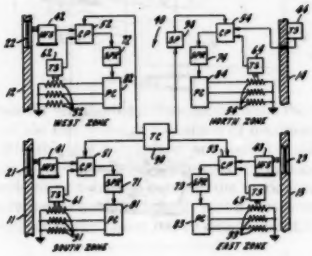
U.S. Cl. 219—483 **12 Claims**

1. A building perimeter heat loss control for a building of the kind having a multiplicity of electrical heaters located around the periphery of the building, adjacent to the outside walls of the building, with the heaters arranged in N zones each including a plurality of heaters along one wall, the perimeter heat loss control comprising:

N radiant heat responsive heat flow sensors, one for each zone, each heat flow sensor facing the outside wall for its zone in spaced relation thereto, which heat flow sensor generates a wall heat rate signal representative of the rate of heat flow through the wall of its zone;

N thermal sensors, one for each zone, each thermal sensor positioned adjacent one of the heaters in its zone in spaced relation thereto, which thermal sensor generates a heater heat rate signal representative of the rate of heat generation by the heaters in its zone;

N comparator means, one for each zone, to which both of



the heat rate signals for that zone are supplied, for generating an error signal representative of deviation of the differential between the rate of heat flow through the wall of the rate of heat generation from the heaters in the zone relative to a predetermined preset differential;

and N power control means, one for each zone, each power control means coupled to the comparator means and the heaters for its zone, for controlling electrical energization of the heaters in its zone in response to the error signal from the comparator means for its zone, increasing or decreasing energization of the heaters in its zone to maintain the error signal approximately at zero.

4,542,284

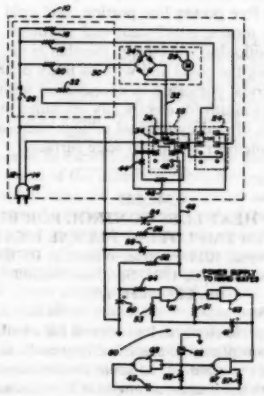
ELECTRICAL APPLIANCE WITH DELAYED WARNING ALARM

Arnold Thaler, Plantation, Fla., and Lai Kin, Kowloon, Hong Kong, assignors to Windmere Corporation, Hialeah, Fla.

Filed Jan. 7, 1983, Ser. No. 456,498

Int. Cl.⁴ H05B *1/02*

U.S. Cl. 219—506 **12 Claims**



1. An electrical hand-held hair-care appliance including a utilization circuit made operative by an electric power source, said appliance comprising:

switch means operative in at least two positions for routing the power from the power source, said switch means operative in a first position to deliver the power to said utilization circuit, and said switch means operative in a second position to deliver said power to an output of said switch means;

a timing circuit including circuit elements for generating a triggering signal after lapse of a predetermined time period after initial activation of said timing circuit by an input signal;

an alarm circuit including circuit elements responsive to said triggering signal for producing an alarm;

converting means receiving the power at the output of said switch means for converting said power to both said input signal and a circuit element powering signal; and

means for delivering said circuit element powering signal to said circuit elements of said timing and alarm circuits, said circuit element powering signal powering said circuit elements of said timing and alarm circuits before said converting means produces said input signal.

4,542,285

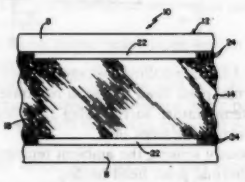
ELECTRICAL HEATER

Frederick G. J. Grise, Osterville, Mass., assignor to Flexwatt Corporation, Canton, Mass.

Continuation-in-part of Ser. No. 580,472, Feb. 15, 1984,. This application Aug. 31, 1984, Ser. No. 646,688

Int. Cl.⁴ H05B *3/16*

U.S. Cl. 219—543 **8 Claims**



1. In a sheet heater including a substrate, a semi-conductor pattern having a pair of parallel, spaced-apart, longitudinally-extending stripes and a central portion extending between and electrically connected to the stripes, and a pair of parallel, spaced-apart, longitudinally-extending conductors one of which overlies and engages each of the stripes, that improvement wherein:

each said conductor has a width greater than that of the respective underlying stripe of said semi-conductor pattern, and includes a pair of transversely-spaced, longitudinally-extending strip portions and a central portion including a plurality of longitudinally-spaced openings located therebetween,

the said strip portion nearer the inner edge of the conductor overlying and engaging a respective one of said stripes and,

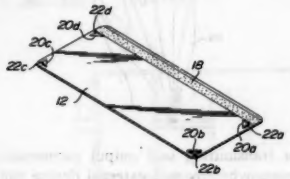
a sealing layer of insulating material overlies the respective conductor, said sealing layer being sealed to said substrate adjacent the transversely inner and outer edges of the conductor and through said longitudinally-spaced openings.

4,542,286

TIME CARD AND CARRIER

Jeffrey Golarz, Ashburnham, Mass., assignor to Simplex Time Recorder Co., Gardner, Mass.

Filed Dec. 3, 1982, Ser. No. 446,537
Int. Cl.[4] G06K *7/10*
U.S. Cl. 235—377 15 Claims



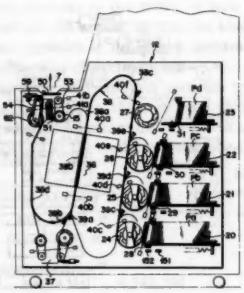
1. A card carrier for an imprintable card, comprising:
a. machine readable storage means for alterably storing data retrievable therefrom;
b. retaining means for releaseably retaining the imprintable card in position on the carrier for printing on the card.

4,542,287

AUTOMATIC BANK NOTE TRANSACTION APPARATUS

Yoshihiro Watanabe, Fujisawa, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 1, 1983, Ser. No. 510,163
Claims priority, application Japan, Jul. 12, 1982, 57-121029
Int. Cl.[4] G06F *15/30*
U.S. Cl. 235—379 9 Claims



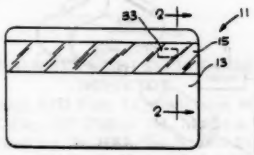
1. An automatic bank note transaction apparatus comprising:
a housing;
note storage means provided in the housing, for storing deposited notes together with previously stored notes and appropriating the deposited and previously stored notes for dispensation;
memory/calculation means for detecting the amounts of money for the notes stored in the note storage means for dispensation, deposited notes, and dispensed notes, for storing the results of the detection, and for calculating the current amount of money for the notes stored in the note storage means; and
display means capable of indicating the amount provided by the memory/calculation means.

4,542,288

METHOD FOR MAKING A LASER RECORDABLE WALLET-SIZE PLASTIC CARD

Jerome Drexler, Los Altos Hills, Calif., assignor to Drexler Technology Corporation, Mountain View, Calif.

Continuation-in-part of Ser. No. 566,966, Dec. 29, 1983, which is a continuation-in-part of Ser. No. 492,691, May 11, 1983, abandoned, which is a continuation-in-part of Ser. No. 238,833, Feb. 27, 1981, abandoned. This application Nov. 21, 1984, Ser. No. 673,573
The portion of the term of this patent subsequent to Feb. 19, 2002, has been disclaimed.
Int. Cl.[4] G06K *19/00*
U.S. Cl. 235—487 10 Claims



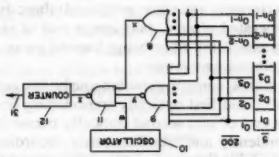
1. A method of making an optical data card comprising,
prerecording information on a strip of laser recording material,
adhering said strip to a wallet-size card base, said strip being laser recordable in place on said card,
bonding a protective transparent laminating material to the recording surface of said strip, and
recording information on said strip with a laser through the laminating material.

4,542,289

AUTOMATIC FOCUSING APPARATUS INCLUDING IMAGE CONTRAST DETECTION MEANS

Shotaro Yokoyama, and Takashi Nishibe, both of Yokosuka, Japan, assignors to Fuji Electric Company Ltd., Kanagawa, Japan

Filed Apr. 8, 1983, Ser. No. 483,248
Claims priority, application Japan, Apr. 8, 1982, 57-57298
Int. Cl.[4] G01J *1/20*
U.S. Cl. 250—201 3 Claims



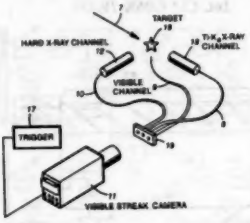
1. Automatic focusing apparatus for an optical imaging system, which includes an optical system adapted to form an image of an object at a focal plane, the apparatus comprising:
a plurality of detector/converters means arranged in an array in the focal plane, each for sensing the light intensity of a respective portion of the image and providing a pulse signal having a pulse-width related to the sensed light intensity;
first means responsive to the pulse signals provided by the plurality of detector/converter means for providing a digital quantity indicative of the difference between the maximum and minimum pulse-widths of the pulse signals; and
second means responsive to the digital quantity for appropriately altering the focus of the optical system to substantially maximize the digital quantity provided by the first means.

4,542,290

APPARATUS FOR RECORDING EMISSIONS FROM A RAPIDLY GENERATED PLASMA FROM A SINGLE PLASMA PRODUCING EVENT

Tai Ho Tan, and Arthur H. Williams, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 24, 1983, Ser. No. 460,529
Int. Cl.⁴ H01J *31/50*
U.S. Cl. 250—213 VT **12 Claims**



1. An apparatus for simultaneously recording temporal and spatial dependence of at least one emission characteristic of a rapidly generated plasma from a single plasma producing event, which comprises in combination:

a. means for receiving said characteristic plasma emission and generating at least one visible light pulse in response thereto said characteristic plasma emission receiving means being disposed in the region of plasma generation;

b. at least one first optically transmitting fiber capable of transmitting said generated visible light pulse said first optically transmitting fiber having an object end and an image end, said object end of said first optically transmitting fiber being positioned substantially in contact with said characteristic plasma emission receiving means and being capable of receiving said generated visible light pulse therefrom, said image end of said first optically transmitting fiber being located away from said region of plasma generation;

c. at least one second optically transmitting fiber capable of transmitting visible light pulses, said second optically transmitting fiber having an object end and an image end, said object end of said second optically transmitting fiber being disposed in the region of plasma generation and being capable of receiving at least one visible light pulse as one characteristic emission produced directly by said rapidly generated plasma, said image end of said second optically transmitting fiber being located away from said region of plasma generation;

d. a visible streak camera simultaneously imaged on said image end of said first optically transmitting fiber and on said image end of said second optically transmitting fiber for independently and simultaneously recording at least one of said visible light pulses appearing at said image end of said first optically transmitting fiber and at least one of said visible light pulses appearing at said image end of said second optically transmitting fiber; and

e. means for triggering said visible streak camera.

4,542,291

OPTICAL FLEX SENSOR

Thomas G. Zimmerman, Flushing, N.Y., assignor to VPL Research Inc., Palo Alto, Calif.

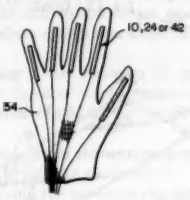
Filed Sep. 29, 1982, Ser. No. 428,322
Int. Cl.⁴ G01B *5/34*
U.S. Cl. 250—231 R **11 Claims**

1. An optical flex sensor which comprises:

(a) fabric;

(b) a unitary flexible tube component comprising detecting means providing output parameters continuously indicative of the extent of the bending of said tube;

(c) means for securing said flexible tube to said fabric; and



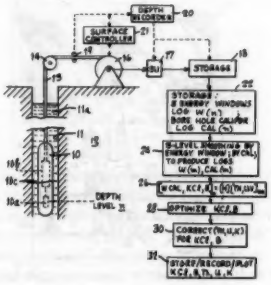
(d) means for transmitting said output parameters to an external device whereby said external device can determine when said fabric and secured flexible tube are bent.

4,542,292

CORRECTION OF NATURAL GAMMA RADIATION LOGS FOR THE EFFECTS OF GAMMA RAY EMISSION FROM AND ATTENUATION BY THE BOREHOLE FLUID

Darwin V. Ellis, Ridgefield, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Apr. 1, 1982, Ser. No. 364,202
Int. Cl.⁴ G01V *5/00*
U.S. Cl. 250—256 **37 Claims**



1. A well logging method comprising the steps of:

deriving a log of natural gamma radiation detected in respective energy windows in a selected depth interval of a borehole containing borehole fluid comprising at least one of (i) a gamma ray emitting substance and (ii) a substance which is a strong attenuator of gamma rays;

converting the windows log into a log of selected gamma radiation emitting subsurface materials in the formations surrounding the borehole which is substantially corrected for at least one of said (i) emitting substance in the borehole fluid and (ii) strongly attenuating substance in the same borehole fluid; and

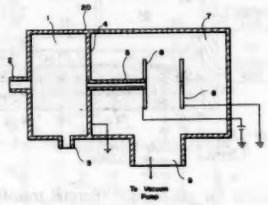
producing a tangible representation of said subsurface materials log.

4,542,293

PROCESS AND APPARATUS FOR CHANGING THE ENERGY OF CHARGED PARTICLES CONTAINED IN A GASEOUS MEDIUM

John B. Fenn, Branford, Conn.; Masamichi Yamashita, Tokyo, Japan, and Craig Whitehouse, Branford, Conn., assignors to Yale University, New Haven, Conn.

Filed Apr. 20, 1983, Ser. No. 486,642
Int. Cl.[4] B01D *59/44;* H01J *49/00*
U.S. Cl. 250—288 38 Claims



1. In a method of increasing the energy of charged particles contained in a gas, the improvement comprising:

(a) maintaining a flow of said gas containing said charged particles from a first region through a tube-like member into a second region where the pressure is maintained substantially lower than in said first region, said flow being great enough to ensure that collisions between molecules of said gas and said charged particles in said tube-like member substantially determine the kinetic energy possessed by said charged particles;

(b) providing along at least part of said tube-like member an electrical potential gradient in a direction which in the absence of said flow of gas would serve to reduce the kinetic energy of said charged particles passing along said tube-like member from said first to said second region, thereby increasing the potential energy of said charged particles;

(c) permitting a free expansion of said gas containing said charged particles at the outlet of said tube-like member into said second region, so that the kinetic energy of said charged particles is no longer determined by collisions with molecules of said gas; and

(d) accelerating said charged particles to a desired kinetic energy by allowing them to pass through an electrical potential defining means maintained at a potential less than that existing at the outlet of said tube-like member.

4,542,294

INFRARED DETECTOR AND METHOD OF PRODUCING THE SAME

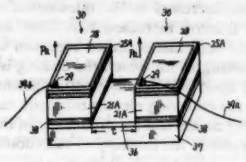
Takashi Tamura, Sakai, and Masami Ikeda, Osaka, both of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Aug. 9, 1983, Ser. No. 521,541
Claims priority, application Japan, Aug. 10, 1982, 57-139603
Int. Cl.[4] H01L *21/58*
U.S. Cl. 250—338 9 Claims

1. The method of producing a pyroelectric type infrared detector comprising the steps of:

preparing a plurality of pyroelectric elements, each mounted on a side of a support block and polarized to produce an electric charge of a desired polarity in response to incident infrared rays; and

bonding said support blocks to one surface on a common base plate to obtain an infrared detector having a plurality of infrared ray detecting sections, each of a desired polarity, responsive to infrared rays from the same general direction.

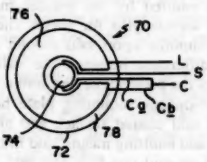


4,542,295

SPECTROMETER WITH SELECTABLE AREA DETECTOR

David R. Mattson, 3222 Patty La., Middleton, Wis. 53562, and Patrick J. Coffey, 301 Oldfield Rd., Madison, Wis. 53717

Filed Sep. 29, 1983, Ser. No. 537,111
Int. Cl.[4] H01L *27/06;* G01J *5/20*
U.S. Cl. 250—352 20 Claims



1. Apparatus for analyzing a sample by interacting a beam of radiant energy with the sample, said apparatus including means for detecting the beam of radiant energy after interaction with the sample and for producing an electrical output corresponding thereto, said detecting means comprising:

A. a first detecting segment for producing an electrical signal in response to radiant energy incident thereon;

B. a second detecting segment for producing an electrical signal in response to radiant energy incident thereon, said second detecting segment extending at least partially around said first detecting segment and being electrically isolated from said first detecting segment; and

C. output selection means operable in a first mode for enabling the electrical signal only from said first detecting segment to contribute to the output of said detecting means, and in a second mode for enabling the electrical signal from at least said second detecting segment to contribute to the output of said detecting means.

4,542,296

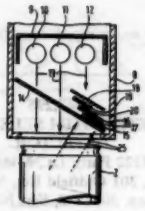
METHOD OF CHECKING THE COATING OF A METAL SURFACE AND DEVICE FOR CARRYING OUT THE SAME

Gerrit J. Kleinnibbelink, Apeldoorn, and Anton O. Timmer, Diepenveen, both of Netherlands, assignors to Thomassen & Drijver-Verblifa N.V., Deventer, Netherlands

Filed Jul. 23, 1982, Ser. No. 401,320
Claims priority, application Netherlands, Jul. 23, 1981, 8103492
Int. Cl.[4] G01J *1/42;* G01N *21/90*
U.S. Cl. 250—359.1 3 Claims

1. Apparatus for checking the presence of discontinuities in the coating of a metal surface, which comprises emitting means for emitting electro-magnetic radiation onto the coated surface whose wavelength spectrum includes wavelengths for which the coating is highly absorptive as well as wavelengths for

which the coating is only slightly absorptive, first monitoring means for receiving electro-magnetic radiation reflected from said coated metal surface and for producing an output signal whose value increases as the intensity of reflected radiation impinging thereon increases, first filter means for allowing substantially only that reflected radiation which corresponds to the wavelengths for which the coating is highly absorptive to impinge upon said first monitoring means, second monitoring means for receiving electro-magnetic radiation emitted by said emitting means and for producing an output signal whose value increases as the intensity of radiation impinging thereon



increases, and second filter means for allowing substantially only radiation emitted by the emitter means which corresponds to the wavelengths for which the coating is highly absorptive to impinge upon said second monitoring means, whereby the difference between the values of said output signals indicates the presence of discontinuities of said coating, and a radiation-opaque mounting plate having one face directed toward said coated surface and an opposite face directed toward said emitting means, said first monitoring means being mounted on said one face and said second monitoring means being mounted on said opposite face.

4,542,297

APPARATUS FOR MEASURING PROFILE THICKNESS OF STRIP MATERIAL

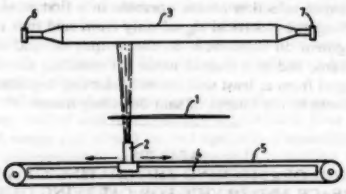
Anthony C. Hold, Bridgend, Wales, assignor to British Steel Corporation, United Kingdom

Filed Apr. 12, 1982, Ser. No. 367,335

Claims priority, application United Kingdom, Apr. 27, 1981, 8112945

Int. Cl.⁴ G01B *15/02*; G01T *1/203*

U.S. Cl. 250—360.1 **12 Claims**



1. Apparatus for measuring the thickness profile of strip, comprising a radiation source reciprocally movable across the strip width on one side thereof and a single elongated detector on the other side, aligned with the scanning source, responsive to incident radiation the amount of which is dependent on the degree of absorption by the strip, said detector being in the form of a rod like scintillator device having a myriad of scintillation particles embedded in a matrix; and means for sensing the light output from the detector in syncrhonism with the scanning source whereby to provide an output representative of the said thickness profile, said means for sensing comprising photo-multiplier means arranged to collect the aggregate light output from along the length of the detector.

4,542,298

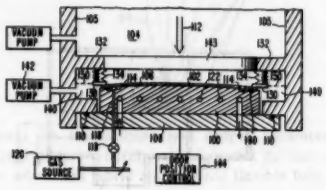
METHODS AND APPARATUS FOR GAS-ASSISTED THERMAL TRANSFER WITH A SEMICONDUCTOR WAFER

Scott C. Holden, Manchester, Mass., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Jun. 9, 1983, Ser. No. 502,812

Int. Cl.⁴ G01N *21/00*

U.S. Cl. 250—443.1 **14 Claims**



1. Apparatus for gas-assisted thermal transfer with a semiconductor wafer during processing in a vacuum chamber comprising:

structure defining an intermediate region adjacent said wafer and isolated from the external environment;

platen means including means for supporting said wafer in a processing position with its front surface exposed to said vacuum chamber, means for introduction of a gas at a prescribed pressure into a thermal transfer region between the rear surface of said wafer and said platen means, and first restriction means operative to restrict the flow of gas between said thermal transfer region and said intermediate region;

second restriction means for restricting the flow of gas between said intermediate region and said vacuum chamber; and

vacuum pumping means coupled to said intermediate region and operative to maintain the pressure therein below said prescribed pressure of the gas in said thermal transfer region.

4,542,299

INFRARED SIMULATOR

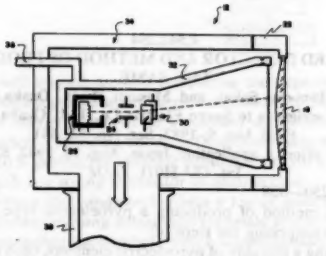
Stefan Scholz, Alzenau, and Egon Tyssen, Hofheim, both of Fed. Rep. of Germany, assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 2, 1984, Ser. No. 627,168

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1983, 3324633

Int. Cl.⁴ H01J *1/54*

U.S. Cl. 250—504 R **5 Claims**



1. Infrared simulator comprising an evacuated cathode-ray tube having a window transmissive to infrared radiation and a film behind the window and within the vacuum of the cathode-

ray tube, said film primarily transducing electron bombardment into infrared radiation.

4,542,300

HIGH FREQUENCY SIGNAL SWITCHING DEVICE

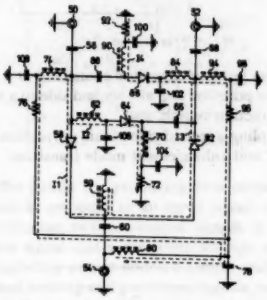
Akihiko Nagatomi, Kobe, Japan, assignor to DX Antenna Company, Limited, Kobe, Japan

Filed Aug. 18, 1983, Ser. No. 524,321

Claims priority, application Japan, Aug. 25, 1982, 57-129039[U]

Int. Cl.⁴ H03H *7/48*

U.S. Cl. 307—112 **2 Claims**



1. A high frequency signal changeover switch comprising first and second input terminals for receiving first and second high frequency input signals, respectively; an output terminal for delivering either of said input signals, selectively; a first pin diode connected between said first input terminal and said output terminal for responding to applied DC operation current of a first polarity to conduct and a second pin diode connected between said second input terminal and said output terminal for responding to applied DC operation current of a second polarity to conduct, a third pin diode connected in series with a first impedance means between said second input terminal and a reference potential point for creating a first dummy impedance in response to said DC operation current of a first polarity to match the impedance of the second input terminal and a fourth pin diode connected in series with a second impedance means between said first input terminal and said reference potential point for creating a second dummy impedance in response to said DC operation current of a second polarity to match the impedance of the first input terminal, said third and fourth pin diodes each being connected through individual impedance means.

4,542,301

CLOCK PULSE GENERATING CIRCUIT

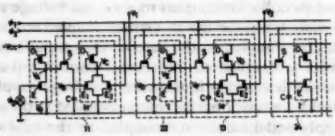
Tadakuni Narabu, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 20, 1983, Ser. No. 543,870

Claims priority, application Japan, Oct. 21, 1982, 57-184989

Int. Cl.⁴ H03K *5/15*; G11C *19/18, 19/28*

U.S. Cl. 307—269 **4 Claims**



1. A clock pulse generating circuit for producing multiphase clock pulses, comprising;

an input terminal for being supplied with an input signal containing a pulse;

first and second clocking terminals for delivering first and second timing signals, respectively, each of said first and second timing signals being composed of pulses having a constant cyclical period and a period of each pulse of first timing signal being not coincident with a period of each pulse of said second timing signal without overlapping to each other;

plural first circuit blocks each comprising a first switching element being supplied with said first timing signal, a first capacitive element coupled in series with said first switching element, and a NOR gate circuit connected to be supplied with said first timing signal and a voltage obtained at the connecting point between said first switching element and said first capacitive element; and

plural second circuit blocks each connected between each successive two of said first circuit blocks to form a series multistate configuration and each comprising a second switching element being supplied with said second timing signal, a second capacitive element coupled in series with said second switching element, and an inverter connected to be supplied with a voltage obtained at the connecting point between said second switching element and said second capacitive element, said second switching element being also connected to the output end of the NOR gate circuit in one of successive two of said first circuit blocks and the output end of the inverter is connected to the first switching element in the other of said successive two of said first circuit blocks;

wherein said input signal is supplied to the first switching element in the first one of said first circuit blocks with a pulse period greater than one cyclical period of said first timing signal and output signals are derived from the NOR gate circuits in said first circuit blocks.

4,542,302

POTENTIAL EQUALIZING APPARATUS

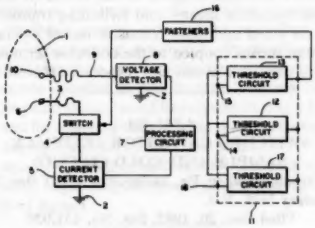
G. Griffioen, Lienden, Netherlands, assignor to Giovanni Mazza, Los Angeles, Calif.

Filed Aug. 8, 1983, Ser. No. 521,491

Claims priority, application Netherlands, Aug. 9, 1982, 8203138

Int. Cl.⁴ H02H *3/00*; G01R *27/14*

U.S. Cl. 307—326 **17 Claims**



1. An apparatus for reducing the difference in electrical potential between two electrical conducting objects located a distance from each other in an electrical conducting medium comprising:

an equalizing cable detachably connected between the two objects for conducting an equalizing current from one object to the other, the equalizing cable having a predetermined resistance value and a temperature coefficient;

a current detector coupled in series with the equalizing cable between the two objects for generating a first output voltage having a value dependent on the equalizing current in the equalizing cable;

an instrument lead detachably connected between the objects;

a voltage detector connected in series with the instrument lead between the objects for sensing the potential difference between the objects and generating a second output voltage having a value dependent on the sensed potential difference;

a processing circuit coupled to receive the first and second output voltages and generate therefrom a third output voltage; and

a decision circuit coupled to the third output voltage for generating an output signal representative of the deviation in electrical resistance between the objects along the equalizing cable and the predetermined resistance value of the equalizing cable.

4,542,303

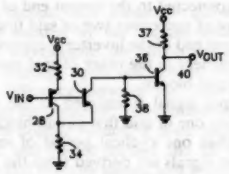
COMPARATOR CIRCUIT

Robert B. Jarrett, Tempe, and Robert A. Neidorff, Chandler, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 3, 1983, Ser. No. 538,619

Int. Cl.[4] H03K *5/153*

U.S. Cl. 307—350 **4 Claims**



1. A comparator circuit for detecting when an input signal reaches a predetermined threshold, comprising:

input transistor means having base, emitter and collector terminals, said base terminal being coupled to monitor an input signal;

impedance means coupled to the emitter and collector terminals of said input transistor means for selectively varying said threshold;

switching transistor means having base, emitter and collector terminals, said base terminal coupled to said input signal and said emitter terminal coupled to the collector terminal of said input transistor means, said switching transistor means turning on when said input transistor means saturates; and

output circuit means coupled to the collector terminal of said switching transistor means and responsive thereto.

4,542,304

SWITCHED CAPACITOR FEEDBACK SAMPLE-AND-HOLD CIRCUIT

Eric J. Swanson, Reading, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 20, 1982, Ser. No. 451,026

Int. Cl.[4] G11C *27/02*

U.S. Cl. 307—353 **4 Claims**

1. A sample-and-hold circuit apparatus of the type comprising:

an amplifier having an inverting input port, a noninverting input port, and an output port;

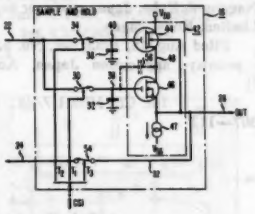
a buffer, comprising an enhancement mode transistor having a gate electrode which forms an input port of said buffer and having a drain-to-source conduction path which at one side forms an output port of said buffer;

a sampling switch connected between a signal input and the input port of said buffer;

a holding capacitor connected at a first side to the input port of said buffer and at a second side to a reference potential;

a feedback means connected to the output port of said buffer and coupled to an input port of said amplifier;

a correction switch connected at a first side to the output port of said amplifier;



a correction holding capacitor connected at a first side to a reference potential and at a second side to a second side of said correction switch, and

means coupling a second side of said correction switch to the drain of said enhancement mode transistor.

4,542,305

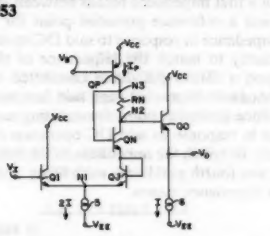
IMPEDANCE BUFFER WITH REDUCED SETTLING TIME

Robert A. Blauschild, Los Altos, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed Feb. 22, 1983, Ser. No. 468,754

Int. Cl.[4] H03K *19/092;* **G11C** *27/02*

U.S. Cl. 307—353 **7 Claims**

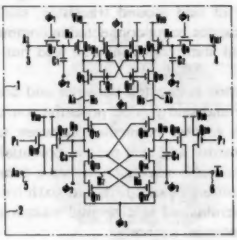


1. A buffer containing a first-polarity input transistor, a first-polarity intermediate transistor, a first-polarity output transistor, a second-polarity transistor where the second polarity is opposite to the first polarity, a first current source coupled between a first voltage supply and a node, and a second current source coupled to the first voltage supply, wherein each transistor is a bipolar transistor having an emitter, a base, and a collector, the input transistor has its emitter coupled to the node and its collector coupled to a second voltage supply, the intermediate transistor has its emitter coupled to the node and its collector coupled to the base of the output transistor whose emitter is coupled to the second current source and whose collector is coupled to the second voltage supply, the second-polarity transistor has its emitter coupled to the second voltage supply and its collector coupled to the base of the intermediate transistor, and means couples the collectors of the intermediate and second-polarity transistors, characterized in that the means comprises a resistor.

4,542,306
BUFFER CIRCUITS FOR USE WITH SEMICONDUCTOR MEMORY DEVICES

Hiroaki Ikeda, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Feb. 2, 1983, Ser. No. 463,338
Claims priority, application Japan, Feb. 3, 1982, 57-16121
Int. Cl.⁴ H03K *17/687;* **G11C** *11/40*
U.S. Cl. 307—443 **7 Claims**

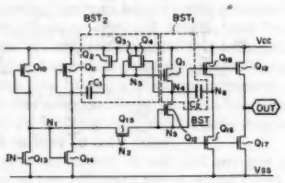


1. In a buffer circuit for producing two output signals of opposite phases in response to an input signal comprising a pre-circuit producing two pre-output signals in accordance with said input signal and a reference voltage signal; and a main circuit including output nodes, a sample and hold circuit for sampling and holding said pre-output signals, and a flip-flop circuit connected to receive said pre-output signals for producing the output signals of the buffer a circuit, the improvement wherein said main circuit comprises a transfer gate circuit enabled by said pre-output signals and disabled by said output signals of the buffer circuit.

4,542,307
DOUBLE BOOTSTRAPPED CLOCK BUFFER CIRCUIT

Fumio Baba, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 26, 1983, Ser. No. 535,835
Claims priority, application Japan, Sep. 28, 1982, 57-169054
Int. Cl.⁴ H03K *17/06, 19/096*
U.S. Cl. 307—482 **6 Claims**



1. A buffer circuit, operatively connected to a supply voltage and to receive an input signal, producing an output signal in response to the input signal, comprising:

first and second output transistors having their drain-source current paths operatively connected in series between the supply voltage and ground, thereby forming a junction between said first and second output transistors, each of said first and second output transistors having a gate;

an output terminal operatively connected to the junction between said first and second output transistors;

a first boot-strap circuit operatively connected to the gate of said first output transistor for charging the gate of said first output transistor to a charged voltage above the supply voltage when the input signal has a first logic level, turning on said first output transistor and charging said output terminal to the supply voltage, said first boot-strap circuit comprising:

a capacitor operatively connected to the gate of said first output transistor; and

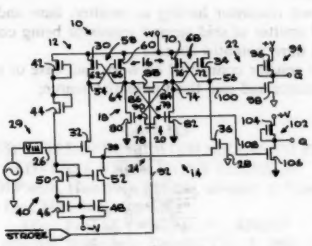
a precharging transistor, having its drain-source current path coupled between the supply voltage and saidcapacitor, for precharging said capacitor and having a gate; and

a second boot-strap circuit having an output node operatively connected to the gate of said precharging transistor in said first boot-strap circuit, for driving the gate of said precharging transistor to a precharged voltage above the supply voltage when the input signal has a second logic level.

4,542,308
SAMPLING COMPARATOR CIRCUIT FOR PROCESSING A DIFFERENTIAL INPUT

John M. Wincn, Cupertino, and Thierry M. Laurent, Sunnyvale, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Dec. 23, 1982, Ser. No. 452,473
Int. Cl.⁴ H03K *3/286;* **G11C** *8/00*
U.S. Cl. 307—494 **11 Claims**



1. A sampling comparator circuit for processing a differential input, having a first input signal and a second input signal, comprising:

differential amplifier means for amplifying said first input signal and said second input signal to produce first amplified signals;

first feedback means, coupled to said differential amplifier means, for providing positive feedback of said first amplified signals to produce second amplified signals;

second feedback means, coupled to said first feedback means, for providing positive feedback of said second amplified signals to produce third amplified signals;

strobe means coupled to said second feedback means, for sampling said second amplified signals during a first strobe state and for enabling said first and second feedback means only during a second strobe state; and

output means, coupled to said second feedback means, for producing logic output signals in response to said third amplified signals.

4,542,309
PHASE SPLITTER WITH INTEGRATED LATCH CIRCUIT

Wilfried Klein, Holzgerlingen; Erich Klink, Schönaich; Knut Najmann, Gärtringen, and Friedrich Wernicke, Schönaich, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armok, N.Y.

Filed Feb. 22, 1983, Ser. No. 468,447
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1982, 82106254
Int. Cl.⁴ H03K *5/22, 17/56*
U.S. Cl. 307—513 **4 Claims**

1. In an integrated circuit, phase splitter circuit means with

a latch circuit incorporated therein, said splitter circuit means comprising:

an input terminal adapted to receive a binary input;

a in-phase output terminal adapted to provide an in-phase (true) output of said binary input;

a out of phase output terminal adapted to provide an out of phase (complementary) output of said binary input;

a first potential source for providing a first potential;

a second potential source for providing a second potential;

a third potential source for providing a third potential;

a first switch circuit having first and second terminals and a control input, said first terminal of said switch circuit being connected to said first potential source;

a second switch circuit having first and second terminals and a control input, said first terminal of said second switch circuit being connected to said third potential source;

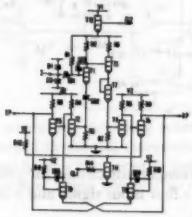
a first transistor having an emitter, base and collector, said base of said first transistor being connected to said input terminal;

a first resistor connected between said base of said first transistor and said second terminal of said first switch circuit;

a second resistor connected between said collector of said first transistor and said second terminal of said first switch circuit;

a second transistor having an emitter, base and collector, said emitter of said second transistor being connected to said third potential source;

a third resistor connected between said base of said second transistor and said third potential source;



a fourth resistor connected between said collector of said second transistor and said second potential source;

a first diode connected between said emitter of said first transistor and said base of said second transistor;

a third transistor having an emitter, base and collector, said base of said third transistor being connected to said collector of said first transistor;

a fourth transistor having an emitter, base and collector, said emitter of said fourth transistor being connected to said third source of potential;

a fifth resistor connected between said collector of said fourth transistor and said second potential source;

a sixth resistor connected between said collector of said third transistor and said second terminal of said first switch circuit;

a seventh resistor connected between said base of said fourth transistor and said third source of potential;

a fifth transistor having an emitter, base and collector, said base of said fifth transistor being connected to said collector of said second transistor;

a sixth transistor having an emitter, base and collector, said base of said sixth transistor being connected to said collector of said fourth transistor;

a seventh transistor having an emitter, base and collector, said base and collector of said seventh transistor being connected in common to said emitter of said third transistor, said emitter of said seventh transistor being connected to said base of said fourth transistor;

an eigth resistor connected between said collector of said fifth transistor and said second parallel source;

a ninth resistor connected between said collector of said sixth transistor and said second potential source;

an eighth transistor having an emitter, base and collector, said collector of said eighth transistor being connected to said collector of said fourth transistor, said emitter of said eighth transistor being connected in common to said collector of said fifth transistor and said in phase output terminal;

a ninth transistor having an emitter base and collector, said collector of said ninth transistor being connected to said collector of said second transistor, said emitter of said ninth transistor being connected in common to said collector of said sixth transistor and said out of phase output terminal;

a tenth resistor connected between said base of said eighth transistor and said second potential source;

an eleventh resistor connected between said base of said ninth transistor and said second potential source; and,

a twelfth resistor connected between a common connection of said emitters of said fifth and sixth transistors and said second terminal of said second switch circuit, and said second potential source.

4,542,310

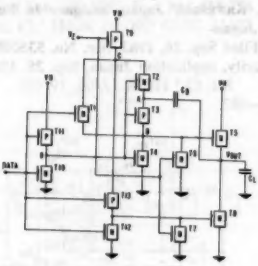
CMOS BOOTSTRAPPED PULL UP CIRCUIT

Wayne F. Ellis, Jericho; William R. Griffin, South Burlington, and Ronald R. Troutman, Essex Junction, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1983, Ser. No. 508,999

Int. Cl.[4] H03K *19/003, 19/017, 19/096, 17/06*

U.S. Cl. 307—578 **17 Claims**



1. A pull up circuit comprising

a first field effect transistor,

an impedance serially connected with said transistor at an output terminal disposed between first and second points of reference potential,

second and third serially arranged field effect transistors connected between said first point of reference potential and a control electrode of said first transistor, said second transistor being of a given conductivity type interposed between said third transistor and said control electrode and said first transistor being of a conductivity type opposite to that of said given conductivity type,

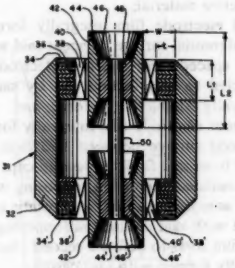
a first capacitor connected between said output terminal and a common point located between said second and third transistors, and

means for selectively applying voltage pulses to the control electrodes of said transistors.

4,542,311
LONG LINEAR STROKE RECIPROCATING ELECTRIC MACHINE

Wyatt S. Newman, Riverdale, and Michael P. Goldowsky, Valhalla, both of N.Y., assignors to North American Philips Corporation, New York, N.Y.

Filed Dec. 27, 1983, Ser. No. 565,952
Int. Cl.⁴ H02K *33/00*
U.S. Cl. 310—13 **13 Claims**



1. A linear stroke reciprocating electric machine, comprising two relatively movable members, mounted to be relatively linearly movable with respect to each other in a movement direction, one of said members being an electric coil, and the other member being a magnetic gap ring having a gap-defining surface having a given length in said movement direction,

a magnetic stator structure fixed to one of said relatively movable members, said structure and said gap ring being gap-defining members, and said structure having a surface spaced from said gap-defining surface to define a gap therebetween, said electric coil being arranged in the gap between the gap ring and the stator structure, and said coil having a length in said movement direction substantially less than said given length,

magnet means for producing a field flux across at least portion of said gap,

means for establishing electrical connection to pass electrical current through said coil, for urging relative motion between said relatively movable members in said movement direction, and

a flux focusing ring, having a length in the movement direction substantially equal to said coil length, said focusing ring being formed of a magnetic material and arranged in said gap between the coil and one of said two gap-defining members, said focusing ring having a thickness compared to the gap width such that substantially all the field flux passes through the coil and the focusing ring, said focusing ring and said coil being fixed relative to each other,

whereby relative movement of said coil and gap ring over a stroke equal to the difference between said given length and said coil length provides a long linear stroke, with substantially all the field flux and all the coil turns interacting over the entire stroke.

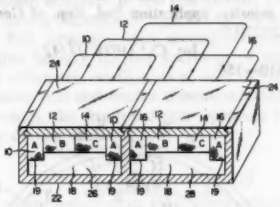
4,542,312
LINEAR MOTOR

Mitsuhiro Kawamura, Nagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 3, 1984, Ser. No. 596,823
Claims priority, application Japan, Apr. 13, 1983, 58-66523; Jun. 6, 1983, 58-102005
Int. Cl.⁴ H02K *41/02*
U.S. Cl. 310—13 **12 Claims**

1. A linear motor comprising: an iron core; and, two or more phase armature windings all of which are not completely contained in a partial space of said iron core;

said phase armature windings being arranged such that the number of the turns of the phase armature winding positioned at the ends of partial space of said iron core with respect to the travelling direction of the magnetic field of said linear motor is greater than that of the other phase armature windings;

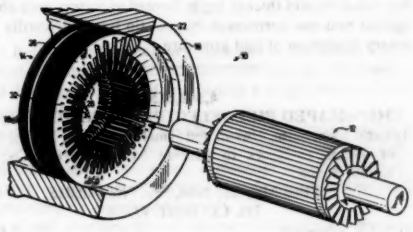


wherein said phase armature winding with the greater number of turns employs a finer strand of wire than said other armature windings.

4,542,313
MAGNETIC CORE SPACER WITH MEANS TO PREVENT ADVERSE VIBRATIONS THEREOF

Carlo R. Di Pietro, Hamilton, Canada, assignor to Westinghouse Canada Inc., Hamilton, Canada

Filed Jun. 15, 1984, Ser. No. 620,937
Claims priority, application Canada, Oct. 3, 1983, 438193
Int. Cl.⁴ H02K *1/32, 15/01*
U.S. Cl. 310—65 **9 Claims**



1. A dynamoelectric machine stator comprising:

a plurality of groups of assembled laminations, each group including two opposed end walls, at least one of said end walls including a plurality of locating slots and spacer engaging means formed therein:

end clamp means for securing said groups in said machine; and

a plurality of magnetic spacers secured between said groups and said clamp means and between adjacent ones of said groups to provide air vents between adjacent walls of said groups; each of said spacers including tongue means engageable with one of said locating slots to position the spacer relative to the one end wall, and said spacer engaging means including a pair of opposing raised tangs located in each tooth portion of end wall laminations for engaging said spacers between said pair of opposing raised tangs to prevent adverse vibrational movement of said spacers during machine operation.

4,542,314
PERMANENT-MAGNET COMMUTATOR MOTOR WITH AUXILIARY POLE/BRACKET

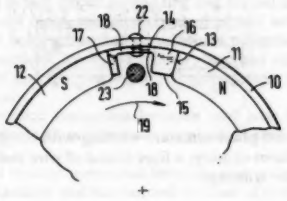
Rainer Corbach, Lüdinghausen; Berthold Utsch, Bochum; Adolf Mohr, Bühlertal, and Kurt Zimmermann, Bietigheim, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 5, 1984, Ser. No. 627,740

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1983, 8322323[U]

Int. Cl.⁴ H02K *23/42*

U.S. Cl. 310—154 **10 Claims**



1. A permanent-magnet excited commutator motor, particularly a multipole small motor, comprising a stator yoke; an armature rotatable in a predetermined direction; two permanent magnet elements having a relatively low permeability, said permanent magnet elements having end faces with a gap formed therebetween, said permanent magnet elements also having permanent magnet tips including one permanent magnet tip located forwardly as considered in the rotary direction of said armature; and a ferromagnetic auxiliary pole arranged on said stator yoke and having a relatively high permeability, said auxiliary pole being formed as a U-shaped bracket having legs abutting against said end faces of said permanent magnet elements, said bracket which forms said auxiliary pole being elastic and asymmetrical and formed as a holding spring, and said legs of said bracket including a thicker leg and a thinner leg, wherein said thicker leg is formed as a stray web abutting against said one permanent magnet tip lying forwardly in the rotary directtion of said armature.

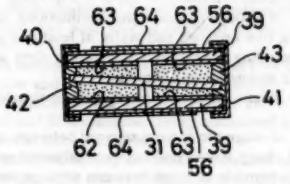
4,542,315
CHIP-SHAPED PIEZOELECTRIC VIBRATOR MOUNT

Takashi Yamamoto, Hakui, and Houdo Kitajima, Takaoka, both of Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed May 15, 1984, Ser. No. 610,815

Int. Cl.⁴ H01L *41/08*

U.S. Cl. 310—348 **3 Claims**



1. A piezoelectric device, comprising:

a dielectric case having an axially extending bore having opposite first and second ends, having respective first and second openings at said first and second ends, said case having an outer peripheral surface, and having an inner circumferential surface defining said bore;

a piezoelectric element housed in said case having first and second vibrating electrodes respectively adjacent said first and second ends;

first and second caps respectively covering said first and second ends so as to close said first and second openings;

first and second masses of electrically conductive material respectively connecting said first and second caps to said first and second vibrating electrodes;

a first electrode film integrally formed on said inner circumferential surface adjacent said first opening, electrically connected to said first cap by said first mass of electrically conductive material;

a second electrode film integrally formed on said inner circumferential surface adjacent said second opening and axially spaced from said first electrode film, electrically connected to said second cap by said second mass of electrically conductive material; and

a continuous electrode film integrally formed on said outer peripheral surface between said first and second ends, spaced from said first and second caps so as to be electrically insulated therefrom, opposing said first electrode film so as to define a first electrostatic capacitor integrally formed with said casing, and opposing said second electrode film so as to define a second electrostatic capacitor integrally formed with said casing.

4,542,316
DISCHARGE LAMPS

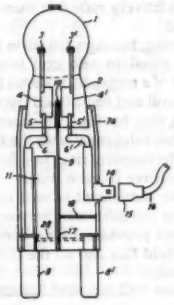
Robert Hall, Bushby, and Thomas S. Ainsworth, Queniborough, both of England, assignors to Thorn EMI plc, London, England

Filed Jun. 3, 1982, Ser. No. 384,511

Claims priority, application United Kingdom, Jun. 6, 1981, 8117400

Int. Cl.⁴ H01J *5/48, 5/50*

U.S. Cl. 313—318 **7 Claims**

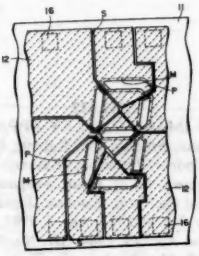


1. A single ended discharge lamp, such as a CID or CIS lamp, having two discharge electrodes mounted in a discharge enevelope and electrically connected by respective leads to respective terminals in a cap member of insulating material supporting the envelope and having two pin members disposed in side-by-side relationship protruding from the base of the cap member, wherein at least one of the pin members is a dummy pin and at least one of said terminals is disposed at one side of the cap member, said lamp further comprising insulation in said cap member provided between the two terminals and between at least one of the terminals and the dummy pin or pins.

4,542,317
FLUORESCENT DISPLAY TUBE

Kiyoshi Morimoto, and Hiroshi Watanabe, both of Mobara, Japan, assignors to Futaba Denshi Kogyo K.K., Mobara, Japan

Filed Dec. 17, 1982, Ser. No. 450,667
Claims priority, application Japan, Dec. 19, 1981, 56-205556
Int. Cl.[4] H05B *33/06, 33/12*
U.S. Cl. 313—496 8 Claims

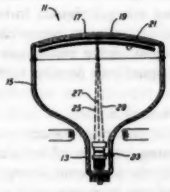


1. A fluorescent display device, comprising:
a substrate made of a light permeable insulating material;
a non-transparent metal film depositedly formed on one surface of said substrate and divided into a plurality of sections electrically separated from one another by narrow slits, said sections of said metal film being formed with respective openings corresponding to the shape of a display pattern;
anode conductors formed of a substantially transparent conductive material, each of said anode conductors being depositedly formed in each of said openings so as to cover the portion of said substrate at which each said opening is provided and at least a part of said metal film provided at the periphery of each said opening;
a cathode disposed opposite and spaced apart from said anode conductors;
a fluorescent layer deposited on each of said anode conductors which emit light when electrons from said cathode impinge thereon;
whereby luminous display of said fluorescent layers is adapted to be observed from the other surface of said substrate.

4,542,318
CRT LENSING ELECTRODES HAVING APERTURES DEFINED BY TAPERED SIDEWALLS

Donald L. Say, Waterloo, N.Y., assignor to North American Philips Consumer Electronics Corp., New York, N.Y.

Continuation-in-part of Ser. No. 450,574, Dec. 16, 1982, abandoned. This application Feb. 4, 1983, Ser. No. 463,791
Int. Cl.[4] H01J *29/62*
U.S. Cl. 313—414 24 Claims

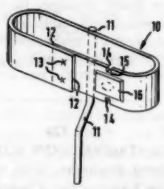


1. In an in-line electron gun structure for a color cathode ray tube, a lensing arrangement in the final low potential lensing and high potential lensing electrodes comprising:
a first lensing structure in the forward portion of the low potential lensing electrode, such structure having three in-line linearly tapered apertures of substantially truncated volumetric configuration, each aperture having beam-exiting front and smaller dimensioned beam-entering rear openings, the front and rear openings being connected by sloping sidewalls; and
a second lensing structure in the rear portion of the high potential lensing electrode in adjacent, facing relationship with the first structure, such second structure having three in-line linearly tapered apertures of substantially truncated volumetric configuration, each aperture having beam-entering rear and smaller dimensioned beam-exiting front openings, the front and rear openings being connected by sloping sidewalls.

4,542,319
MERCURY DISPENSER FOR ELECTRIC DISCHARGE LAMPS

Julian P. Grenfell, Woking, and Stanley W. Stephens, Lightwater, both of England, assignors to Sale Tilney Technology PLC, London, England

PCT No. PCT/GB81/00228, § 371 Date Jun. 1, 1982, § 102(e) Date Jun. 1, 1982, PCT Pub. No. WO82/01440, PCT Pub. Date Apr. 29, 1982
PCT Filed Oct. 19, 1981, Ser. No. 385,641
Claims priority, application United Kingdom, Oct. 22, 1980, 8034113
Int. Cl.[4] H01J *9/395, 61/28*
U.S. Cl. 313—546 18 Claims



1. A heat rupturable mercury dispenser in combination with a cathode disintegration shield, the combination comprising:
said disintegration shield comprising a single piece of metal and having a side face;
said mercury dispenser comprising two elements secured together to define a sealed space between said elements;
said sealed space containing a material selected from the group consisting of mercury and mercury-containing intermetallic compounds; and
one of said elements of said mercury dispenser being a wall secured to a portion only of said side face of said disintegration shield and the other of said elements being said portion of said side face to which said wall is secured.

4,542,320
CATHODE RAY TUBE

Hiroshi Suzuki, Nagaokakyo; Masao Natsuhara, Ohtsu, and Chisato Kurusu, Suita, all of Japan, assignors to Matsushita Electronics Corporation, Kadoma, Japan

Filed Feb. 13, 1984, Ser. No. 579,504
Claims priority, application Japan, Feb. 14, 1983, 58-23447
Int. Cl.[4] H01J *29/46, 29/56*
U.S. Cl. 315—15 7 Claims

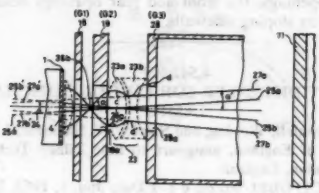
1. A cathode ray tube comprising an electron gun, a fluorescent screen and an evacuated enclosure enclosing said electron gun and said fluorescent screen therein,
said electron gun comprising at least
a cathode,
a first grid (G1) as a control grid,
a second grid (G2) on which an accelerating potential is to be applied,

a third grid (G3) on which a focussing potential is to be applied,

which are disposed in this sequential order and impressed with such predetermined potentials that:

maximum of the first derivative of the axial potential of said electron gun within a range between said second grid (G2) and said third grid (G3) is in a range from 5×10^4 V/cm to 5×10^5 V/cm, and

maximum value and minimum value of the second derivative of said axial potential of said electron gun are located at the distances on the axis determined from following relations:



$$1.0\ D_1 \leqq Z_1 \leqq 2.0\ D_1$$

and

$$0.5\ D_1 \leqq Z_2 - Z_1 \leqq 1.2\ D_1,$$

wherein

Z_1 and Z_2 are the distances on the axis of said electron gun from electron beam emitting face of said cathode to points of said maximum value and a minimum value of said second derivative, respectively, and

D_1 is diameter of electron passing aperture of said first grid (G1).

4,542,321

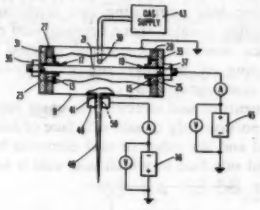
INVERTED MAGNETRON ION SOURCE

Bawa Singh, and David Boyarsky, both of Cherry Hill, N.J., assignors to Denton Vacuum Inc, Cherry Hill, N.J.

Filed Jul. 12, 1982, Ser. No. 397,527

Int. Cl.³ H01J *7/24*

U.S. Cl. 315—111.81 **4 Claims**



1. An ion source comprising in combination: A hollow cathode chamber formed by having a substantially cylindrical wall and end pieces fitted at the ends of said cylindrical wall and said hollow cathode chamber further formed to hold ionizable gas; at least first and second apertures formed in said substantially cylindrical wall; anode means formed and disposed to extend substantially axially through said cathode chamber and extending from at least one of said end pieces; insulation means formed and disposed to electrically insulate said cathode means from said anode means; magnetic flux generating means formed and disposed to generate lines of magnetic flux which pass, from one of said end pieces to the other end piece, through said cathode chamber and substantially coaxially with said anode means; voltage source means connected to said cathode means and said anode means to produce an electrostatic field therebetween within said cathode chamber; ionizable gas source means coupled to said first aperture to provide ionizable gas to said cathode chamber whereby said gas will be ionized and ions will be accelerated toward said cathode chamber wall thereby causing some of said ions to pass in a stream through said second aperture; and ion beam focusing means disposed in close proximity to said second aperture to focus to a point an ion stream emanating therefrom to produce greater ion current at a lower chamber pressure.

4,542,322

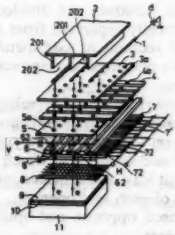
PICTURE IMAGE DISPLAY APPARATUS

Hiroyuki Irie, Osaka; Susumu Ide, Katano; Kinzo Nonomura, Hirakata; Masanori Watanabe, Katano, and Yoshinobu Takesako, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 250,712, Apr. 3, 1981, abandoned. This application Apr. 19, 1984, Ser. No. 602,086

Int. Cl.⁴ H01J *29/70, 29/72*

U.S. Cl. 315—366 **13 Claims**



1. A picture image display apparatus comprising:

a flat type vacuum enclosure having a transparent face panel,

a row of parallelly disposed linear thermionic cathodes,

an electron beam extractor electrode which produces a predetermined number of two dimensionally disposed electron beams out of the electron emission from said linear thermionic cathodes,

a row of control electrodes disposed parallelly in a direction perpendicular to those of said linear thermionic cathodes,

a row of deflection electrodes,

a phosphor screen formed on the inner face of said face panel,

an anode of thin metal film formed on said surface of said phosphor screen,

a deflection signal generator which issues a deflection signal to be applied to said deflection electrodes, and

circuits for producing control signals to be applied to said control electrodes, said circuits comprising a memory for storing a video signal and a multiplexer for converting said stored video signal into parallel signals for said control electrodes,

wherein the improvement is that

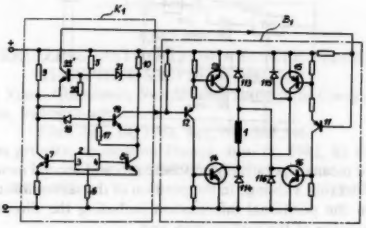
said deflection signal generator issues a deflection signal having two scanning periods of substantially the same length during 1 cycle and comprising a first scanning period wherein voltage increases and a second scanning period wherein voltage decreases, in both of said first scanning period and second scanning period said control signals being applied to said control electrodes to produce image spots in both scanning periods.

4,542,323

DIRECT CURRENT MOTOR WITHOUT COMMUTATOR

Benno Doemen, St. Georgen, Fed. Rep. of Germany, assignor to Papst Motoren GmbH & Co KG, St. Georgen, Fed. Rep. of Germany

Continuation of Ser. No. 287,061, Jul. 27, 1981, abandoned, which is a continuation of Ser. No. 40,276, May 18, 1979, abandoned. This application Jun. 1, 1983, Ser. No. 499,670
Claims priority, application Fed. Rep. of Germany, May 22, 1978, 2822315
Int. Cl.[4] H02K *29/00*
U.S. Cl. 318—254 6 Claims



1. An electronic power supply for a commutatorless DC motor which consists of

(a) a permanently magnetized rotor with north and south poles and a magnetic field,

(b) a stator winding arrangement consisting of only a single stator winding with two opposed ends,

(c) a rotor position sensing arrangement consisting of only a single stationary field sensor which responds to said magnetic field to produce a signal having a first magnitude in response to a north pole, a second magnitude in response to a south pole, and at least a third magnitude in response to a transistor between such poles, and

(d) means for producing a reluctance torque at least during the gaps of the electromagnetic torque generated by the interaction of said rotor magnetic field and said stator winding, consisting of

only a single bridge cooperating with said single stationary field sensor and having four bridge arms each including a semiconductor switch, the bridge arms being interconnected at a first junction, a second junction, a third junction and a fourth junction to form a bridge network, which bridge network can be so connected that the first and second junctions are each connectable to an individual one of two opposed sides of a DC source and the third and fourth junctions are each connectable to an individual one of the ends of the stator winding; and

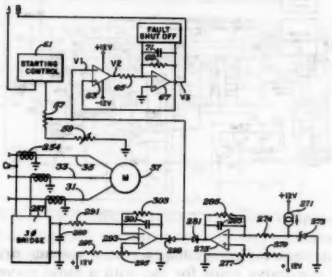
a control circuit connecting the semiconductor switches and the field sensor together and operating in a manner that when the sensor produces a signal of the first magnitude, a first pair of semiconductor switches will become conductive and current will flow through the stator winding in a first direction, when the sensor produces a signal of the second magnitude, a second pair of semiconductor switches will become conductive and current will flow through the stator winding in a second direction opposed to the first direction, and when the sensor produces a signal of the third magnitude, all semiconductor switches will become non-conductive and current will cease to flow in the stator winding.

4,542,324

OVERTEMPERATURE SPEED CONTROL FOR A VARIABLE SPEED DRIVE

John M. Leuthen, Claremore, Okla., assignor to Hughes Tool Company, Houston, Tex.

Filed Dec. 20, 1982, Ser. No. 451,368
Int. Cl.[4] H02P *5/40*
U.S. Cl. 318—798 3 Claims



1. In a system for varying the speed of a motor, the system having rectifying means for converting AC voltage supplied by a power source to DC voltage on a positive rail and a negative rail, switch means for switching the DC voltage to provide AC voltage of selected frequency, control means for controlling the switch means, and source means for providing a DC demand voltage to the control means to select the frequency, the improvement comprising:

sensing means for sensing the temperature in the environment of the system and providing a corresponding electrical response; and

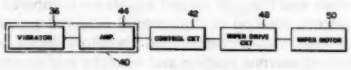
temperature comparator means for comparing the electrical response to a reference voltage, and if the electrical response indicates overtemperature, for reducing the demand voltage by a value corresponding to the difference, to reduce the speed of the motor.

4,542,325

RAIN CONDITION DEPENDENT WIPER CONTROL SYSTEM FOR AN AUTOMOTIVE VEHICLE

Kyoji Kobayashi, Chigasaki; Masaru Kato, Hiratsuka, and Koichi Fujisawa, Samukawa, all of Japan, assignors to Nissan Motor Company, Limited and Jidosha Denki Kogyo Kabushiki Kaisha, both of Yokohama, Japan

Filed Jan. 26, 1984, Ser. No. 574,272
Claims priority, application Japan, Jan. 28, 1983, 58-11490
Int. Cl.[4] B60S *1/08*
U.S. Cl. 318—483 11 Claims



11. A method for controlling a windshield wiper comprising:

(a) sensing rain conditions by sensing vibrations caused by falling rain and generating a rain condition signal indicative of said sensed rain conditions;

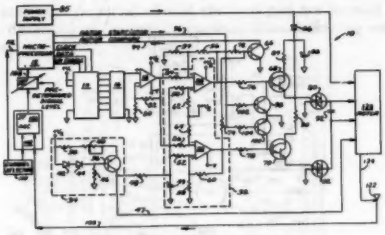
(b) detecting whether the windshield wiper is in a predetermined position and producing a wiper position indication if said detection is positive; and

(c) processing said rain condition signal to generate a drive signal to initiate driving of the windshield wiper only in the presence of said wiper position indication.

4,542,326
AUTOMATIC ANTENNA POSITIONING SYSTEM

Donald L. Hornback, St. Joseph, Mich., assignor to Heath Company, St. Joseph, Mich.

Filed Oct. 8, 1982, Ser. No. 433,568
Int. Cl.[4] G05B *23/02*
U.S. Cl. 318—565 10 Claims



1. A system for positioning a rotary antenna driven by a voltage responsive rotor for use with a radio wave receiver having frequency selector means for selectively receiving signals from a plurality of predetermined stations, sand antenna positioning system comprising:

voltage sensing means coupled to said rotor and responsive to the position of said rotor for generating first signals representing current rotor position and second signals representative of antenna positions for receiving a signal greater than a predetermined threshold signal level from each of said plurality of predetermined stations;

signal processing means coupled to said voltage sensing means for storing said second signals representative of antenna positions for receiving signals greater than said predetermined threshold signal level from each of said plurality of predetermined stations;

position comparator means coupled to said rotor and to said signal processing means for recalling a second signal therefrom upon receiver turn-on or engagement of said selector means for receiving a signal from one of said predetermined stations and coupled to said voltage sensing means for comparing said first and second signals and for generating a third signal representing the difference between said first and second signals and for providing said third signal to said rotor for positioning said antenna to receive a signal greater than said predetermined threshold signal level from one of said plurality of predetermined stations; and

signal comparator means coupled to said antenna for comparing received signal strength with a predetermined threshold signal level and coupled to said signal processing means for providing a continue command to said position comparator means if the received signal strength does not exceed said predetermined threshold signal level when said first and second signals are compared whereby antenna rotation continues until received signal strength exceeds said predetermined threshold signal level at a second antenna position and whereby said second antenna position is stored in said signal processing means as one of said second signals for subsequent use.

4,542,327
SPEED CONTROL APPARATUS

Tetsuro Sakano, Mitaka, Japan, assignor to Fanuc Ltd., Tokyo, Japan

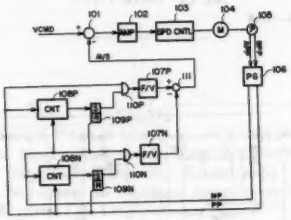
Filed Oct. 20, 1982, Ser. No. 435,364
Claims priority, application Japan, Oct. 22, 1981, 56-169018
Int. Cl.[4] G05B *19/24*
U.S. Cl. 318—571 10 Claims

1. A speed control apparatus for a servomotor, comprising:

a position detector for generating positional information proportional to an angle of rotation of the servomotor;

first means for generating speed information based on the positional information in order to feed back said speed information as actual speed information through negative feedback;

second means, operatively connected to said position detector, for detecting reversal of the direction of rotation of the servomotor;



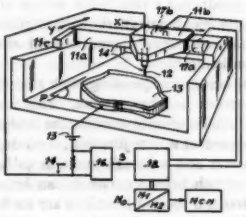
third means, operatively connected to said second means, for detecting a change in the position of the servomotor based on the positional information including the direction of rotation of the servomotor; and

fourth means, operatively connected to said first, second and third means, for substantially blocking said speed information until the position of the servomotor is changed beyond a predetermined amount.

4,542,328
PROCESS FOR ACQUIRING DATA REPRESENTATIVE OF THE SHAPE OF AN OBJECT

Jean Pouyet, Nogent sur Marne, France, assignor to Etablissements Lemoin & Cie, Paris, France

Filed Oct. 4, 1982, Ser. No. 432,450
Claims priority, application France, Oct. 9, 1981, 81 19015
Int. Cl.[4] G05B *19/25*
U.S. Cl. 318—573 12 Claims



1. A process for acquiring data representative of the shape of an object comprising the steps of:

selecting an object having a surface the shape of which may be represented by a plurality of points defining poles;

moving one end of a feeler and said object into contact with one another at a succession of contact points defining said poles such that said contact points lie in a plane within a reference coordinate system, said feeler and object being constrained to move substantially along straight line segments in said plane while moving to produce said succession of contact points defining said poles and said moving step comprising the following cyclic steps for at least a portion of said moving,

moving said feeler and object away from one another in a first direction perpendicular to a straight line joining two preceding poles;

moving said feeler and object relative to one another in a

second direction perpendicular to said first direction, and

moving said feeler and object relative to one another in a third direction perpendicular to said second direction until the next successive point of contact is detected;

detecting said contact between said object and feeler to define said poles;

determining in said reference coordinate system the coordinates of said poles in said plane;

storing the coordinates of said poles;

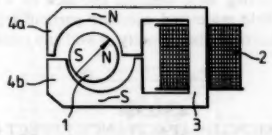
computing from said poles a plurality of arcs of circles defining the shape of the object between said poles, each arc being defined by at least two of said poles; and

providing a set of coordinates of said poles and of computed arcs as data representing the shape of said object.

4,542,329
ENERGIZING METHOD FOR A SINGLE PHASE TIMEPIECE STEPPING MOTOR

Mai Tu Xuan, Chavannes, Switzerland, assignor to Omega SA, Bienne, Switzerland

Filed Jun. 14, 1983, Ser. No. 504,346
Claims priority, application France, Jun. 21, 1982, 82 11433
Int. Cl.⁴ H02K *37/00*
U.S. Cl. 318—696 **12 Claims**



1. Method of energizing a single phase timepiece stepping motor wherein the motor winding receives with each driving pulse just sufficient energy to assure a single rotor step, said motor exhibiting a positioning couple Ca, a drag couple Cr and a magnet-to-winding coupling factor k, comprising the following steps:

applying a predetermined voltage of constant amplitude to the motor winding during a first predetermined time period T_1 to drive said motor in one direction;

following said first time period causing a substantially constant current to flow through the motor winding during a second time period of a predetermined maximum duration T_2 at the end of which the rotor will have reached an angular position such as to assure completion of its step, said substantially constant current being applied to said motor winding in a sense to drive said motor in said one direction; and

interrupting energization of the winding at the end of said second time period.

4,542,330
LOW INPUT VOLTAGE PRECISION DC-TO-DC VOLTAGE CONVERTER CIRCUIT

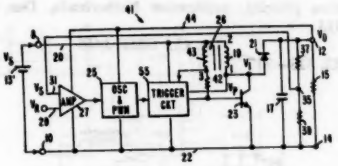
William H. Terbrack, Irvine, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 4, 1983, Ser. No. 538,739
Int. Cl.⁴ G05F *1/46*
U.S. Cl. 323—222 **3 Claims**

1. In a DC-to-DC converter of the type having a first coil alternately connected by means of an electronic control circuit across a source of DC potential and in series with said source across an output capacitor so as to generate a voltage across said capacitor greater than that of said DC potential, said electronic control circuit including an electronic switching transistor connected to said first coil, the improvement comprising:

(a) a second coil electromagnetically coupled to said first coil and forming therewith a single center tapped transformer terminating in first and second end taps;

(b) means for electrically connecting said transformer at its center tap to said source of DC potential, at one end tap to the collector of said switching transistor and at the other end tap to the base circuit of said switching transistor, so as to create a blocking oscillator comprising said switching transistor and said coils, wherein a current conducting



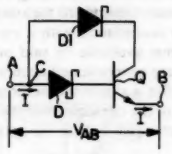
path in said electronic switching transistor is opened and closed during each operating cycle of said oscillator so as to initiate generation of said voltage across said capacitor; and

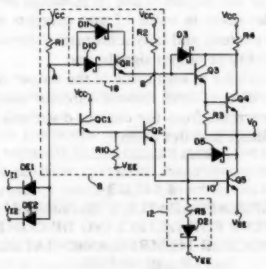
(c) means for applying the voltage developed across said output capacitor to said electronic control circuit to serve as its operating potential during circuit start-up and thereafter.

4,542,331
LOW-IMPEDANCE VOLTAGE REFERENCE

Richard M. Boyer, Orem, Utah, assignor to Signetics Corporation, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 519,440, Aug. 1, 1983,. This application Dec. 23, 1983, Ser. No. 564,869
Int. Cl.⁴ G05F *3/08*
U.S. Cl. 323—313 **20 Claims**





1. A voltage reference which provides a reference voltage between a first terminal and a second termrnal at variable voltage the voltage reference comprising:

a diode having a first electrode and a second electrode that form a rectifying junction;

a bipolar transistor having a collector coupled to a node between the first terminal and the first electrode, an emitter coupled to the second terminal, and a base coupled to

the second electrode such that the diode is oriented in the forward conductive direction of the base-emitter junction of the transistor.

4,542,332

PRECISION CURRENT-SOURCE ARRANGEMENT

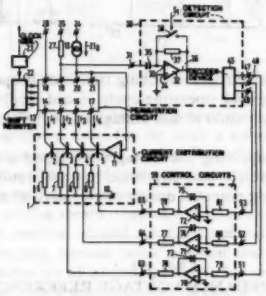
Rudy J. van de Plassche, Sunnyvale, Calif., assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 16, 1983, Ser. No. 562,338

Claims priority, application Netherlands, Dec. 28, 1982, 8205013

Int. Cl.⁴ G05F *3/16*

U.S. Cl. 323—317 **13 Claims**



1. A precision current-source arrangement for generating a plurality of currents whose values are proportioned accurately relative to each other, which arrangement comprises

a current-distribution circuit for generating a plurality of currents of substantially equal values, and

a permutation circuit for transferring the currents from the current-distribution circuit to the outputs of the permutation circuit in accordance with a cyclic permutation, so that the currents available on said outputs have average values which are proportioned accurately relative to each other and exhibit a ripple whose components depend on the difference of the currents from the current-distribution circuit; characterized in that the arrangement also comprises

a detection circuit for, in synchronism with the appearance of the currents from the current-distribution circuit on at least one of the outputs of the permutation circuit, detecting the deviation in value of said currents relative to a reference current, and in synchronism therewith, generating a plurality of output signals, and

control circuits for at least some of the output signals of the detection circuit, said control circuits controlling the relevant currents from the current-distribution circuit so as to minimize said deviation.

4,542,333

METHOD AND APPARATUS UTILIZING MAGNETIC FIELD SENSING FOR DETECTING DISCONTINUITIES IN A CONDUCTOR MEMBER ASSOCIATED WITH A GLASS SHEET

Harry S. Koontz, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 5, 1983, Ser. No. 491,683

Int. Cl.⁴ G01R *33/00, 31/08*

U.S. Cl. 324—52 **13 Claims**

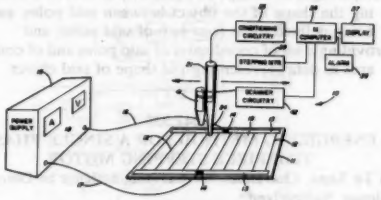
1. A method of detecting electrical discontinuities in a plurality of electrically connected conductive resistive heater grid lines disposed on a major surface of a glass sheet, comprising the steps of:

applying electric current to the heater grid lines;

providing a magnetic field detection means in spaced relation to the glass sheet;

moving the glass sheet and said magnetic field detection means relative to one another;

wherein said magnetic field detection means is disposed nearer to said glass sheet major surface on which the grid lines are disposed than to the opposite major surface of the glass sheet;



wherein said detection means detects the magnetic field associated with each of the grid lines; and

providing information about the magnetic field associated with each of the grid lines in response to said detection means detecting step, wherein the lack of a detectable magnetic field associated with any particular grid line(s) denotes electrical discontinuity of said any particular grid line(s).

4,542,334

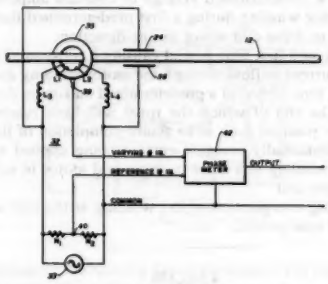
INDUCED-SIGNAL CAPACITANCE EFFECT CABLE TRACKING SENSOR

Floyd E. Nelson, Oxnard, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 26, 1983, Ser. No. 535,488

Int. Cl.⁴ G01R *27/26*

U.S. Cl. 324—61 R **1 Claim**



1. Apparatus for burying a submarine cable that has previously been laid on a submerged surface comprising:

a. a submerged self-propelled vehicle comprising means for driving said vehicle over the surface on which said submarine cable has been laid;

b. a differential capacitor mounted on a boom in front of said vehicle and in the vicinity of said cable in the direction that said cable extends on the submerged surface;

c. said differential capacitor having a first capacitor plate positioned in a verticle plane on one side of said cable and a second capacitor plate positioned in a verticle plane on the other side of said cable;

d. a Wheatstone bridge including two non-reactive arms and two inductive arms, a high frequency signal connected

across the inductive arms and across said non-reactive arms;

e. said inductive arms being inductors wound on a toroidal core through which said cable is passed and injecting said signal into said cable;

f. said capacitor plates being connected across said inductor arms of said Wheatstone bridge and causing said bridge to unbalance and provide an output signal when said cable is not centered between the two planes of said differential capacitor;

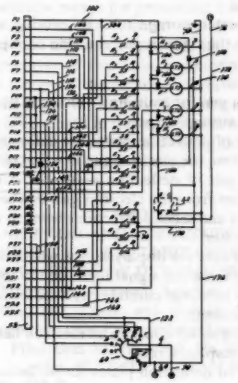
g. said vehicle driving means being responsive to said output signal to steer said vehicle in a direction to maintain said cable centered between the vertical planes in which said capacitor plates are positioned.

4,542,335

ELECTRONIC CONTROL CIRCUIT SYSTEMS ANALYZER

Richard L. Williams, Jacksonville, Fla., assignor to Miller Special Tools, Division of Triangle Corporation, Garden City, Mich.

Filed Feb. 15, 1983, Ser. No. 466,669
Int. Cl.⁴ G01R *31/02*
U.S. Cl. 324—66 **11 Claims**



1. A method of testing the integrity of an electronically controlled vehicle fuel injection system of the type having a plurality of electrically responsive elements and at least one grounding circuit coupled through a wiring system having first and second ends to a central control unit comprising the steps of

electrically coupling one end of said wiring system to a tester comprising connector means having a plurality of terminals for coupling to said wiring systems, first switching means coupled to one of said terminals, second switching means coupled to another of said terminals, indicator means coupled to said first and second switching means for producing a signal indicative of the integrity of said elements;

actuating said first switching means to electrically couple a first of said elements to said indicator means thereby enabling said indicator means to produce a signal indicative of the integrity of said first element;

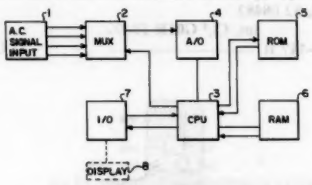
actuating said second switching means to electrically couple said grounding circuit to said indicator means thereby enabling said indicator means to produce a signal indicative of the integrity of said grounding circuit.

4,542,336

METHOD AND APPARATUS FOR SAMPLING BROAD BAND SPECTRA IN FUEL QUANTITY MEASUREMENT SYSTEMS

Fred D. Powell, Middlebury, Vt., assignor to Simmonds Precision Products, Inc., White Plains, N.Y.

Filed May 11, 1983, Ser. No. 493,532
Int. Cl.⁴ G01R *23/16*
U.S. Cl. 324—77 B **14 Claims**



1. A method for sampling a broad band sparse spectrum Φ having a base band and a carrier frequency f_c comprising the steps of,

(i) determining the number of bands in said spectrum containing significant levels of energy,

(ii) determining the bandwidths of each of said bands, and

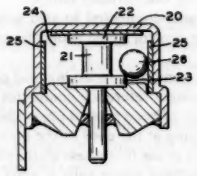
(iii) selecting a sampling frequency of said bands such that all the integer multiples thereof lie in a region of said spectrum where there is no energy to be aliased.

4,542,337

ELECTRO-MECHANICAL ANTI-TAMPERING DEVICE FOR ELECTRIC METERS

Roger A. Rausch, Plymouth, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 30, 1982, Ser. No. 429,345
Int. Cl.⁴ G01R *1/00*
U.S. Cl. 324—110 **9 Claims**



1. An apparatus for indicating electric meter tampering comprising:

switch means positioned in said meter, said switch means including normally closed contact means, the closed status of which is sensitive to external disturbances to said meter, said disturbances causing said contact means to temporarily open, and wherein said contact means further comprises,

an enclosed race having a central inner contact and a plurality of spaced outer contacts; and

an electrically conductive, follower element disposed in and free to move around said race and which comes to rest in any stable position as dictated by gravity such that in any such stable position one of said outer contacts is electrically connected to said center contact via said follower element and when said element is disturbed from any such stable position the circuit is temporarily opened;

actuator means responsive to the opening of said normally closed contact means;

indicator means responsive to said actuator means to indicate the opening of said contact means.

4,542,338

OPTICAL FIBRE INTERFEROMETRIC ELECTRIC CURRENT MEASURING DEVICE

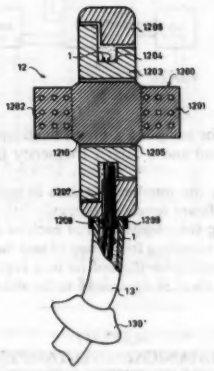
Hervé Arditty, and Michel Rollin, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Mar. 9, 1983, Ser. No. 473,537

Claims priority, application France, Mar. 12, 1982, 82 04222; May 14, 1982, 82 08482

Int. Cl.⁴ G01R *19/00*

U.S. Cl. 324—117 R **22 Claims**



1. A device for measuring at least one current circulating in a high voltage power distribution line using at least one interferometric measuring means, comprising:

an optical fibre in which circulate two waves in opposite directions, the current to be measured inducing a first phase shift between the two waves emerging at the ends of the optical fibre by the Faraday effect;

optoelectronic circuits connected to said optical fibre supplying an electric control signal proportional to this phase shift; and

a reference current generator receiving said electric control signal and supplying a reference conductor circuit inducing by the Faraday effect a second phase shift between the two waves emerging at the ends of the optical fibre in the opposite direction to the first phase shift and, of amplitude such that the resulting phase shift is zero, the reference current value being directly proportional to the current to be measured;

wherein the improvement comprises an apparatus for each current to be measured, where each apparatus comprises:

a measuring head made from an insulating material and placed on a conductor through which the current to be measured flows;

an element made from an insulating material and perforated by a connecting channel, one of the ends of said channel issuing into the measuring head; and

an electrically grounded base incorporating said reference circuit and linked with the second end of the channel made in the insulating element:

wherein the optical fibre of each interferometric measuring means is disposed in such a way as to form at least one closed loop describing a path starting in the base, traversing the channel in a first direction, forming a turn around the conductor within the measuring head, passing through the channel again in the opposite direction and returning to the base in order to form at least one turn around the reference conductor circuit.

4,542,339

CATHODE RAY OSCILLOSCOPE WITH A WAVEFORM STORAGE CAPABILITY

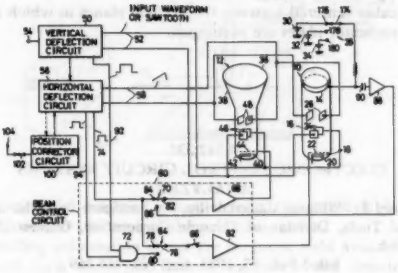
Mitsuo Iwakura, Ichikawa; Toru Takahashi, Wako, and Kensaku Ono, Yokosuka, all of Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed Jul. 25, 1983, Ser. No. 516,860

Claims priority, application Japan, Aug. 2, 1982, 57-135005

Int. Cl.⁴ G01R *13/20;* **H01J** *29/50*

U.S. Cl. 324—121 R **8 Claims**



1. A cathode ray oscilloscope with a waveform storage capability, comprising:

(a) a signal input;

(b) a scan converter storage tube for storing a waveform received from the signal input, the scan converter storage tube comprising:

(1) a storage target;

(2) an electron gun for emitting an electron beam directed toward the storage target;

(3) a first pair of deflection plates for deflecting the electron beam from the electron gun in a first direction; and

(4) a second pair of deflection plates for deflecting the electron beam from the electron gun in a second direction, the first and second directions being at right angles with each other;

(c) a cathode ray tube for displaying the waveform received either directly from the signal input or via the scan converter storage tube, the cathode ray tube comprising:

(1) a display screen;

(2) an electron gun for emitting an electron beam directed toward the display screen;

(3) a first pair of deflection plates for deflecting the electron beam from the electron gun of the cathode ray tube in the first direction; and

(4) a second pair of deflection plates for deflecting the electron beam from the electron gun of the cathode ray tube in the second direction;

(d) a first deflection circuit for applying a deflection voltage in the first direction, representative of the input waveform, at least to the first pair of deflection plates of the cathode ray tube in displaying the input waveform directly on the display screen of the cathode ray tube and at least to the first pair of deflection plates of the scan converter storage tube in writing the input waveform on the storage target of the scan converter storage tube, and for applying a deflection voltage in the first direction both to the first pair of deflection plates of the scan converter storage tube and to the first pair of deflection plates of the cathode ray tube for the purpose of raster scan in reading the waveform from the storage target of the scan converter storage tube and displaying the waveform on the display screen of the cathode ray tube;

(e) a second deflection circuit for applying a sawtooth deflection voltage in the second direction at least to the second pair of deflection plates of the cathode ray tube in displaying the input waveform directly on the display

screen of the cathode ray tube and at least to the second pair of deflection plates of the scan converter storage tube in writing the input waveform on the storage target of the scan converter storage tube, and for applying a deflection voltage in the second direction both to the second pair of deflection plates of the scan converter storage tube and to the second pair of deflection plates of the cathode ray tube for the purpose of raster scan in reading the waveform from the storage target of the scan converter storage tube and displaying the waveform on the display screen of the cathode ray tube;

(f) sweep speed selector means associated with the second deflection circuit for selecting a speed at which the electron beams are swept in the second direction in the scan converter storage tube and the cathode ray tube in response to the sawtooth deflection voltage;

(g) a beam control circuit for applying an intensity signal to the electron gun of the cathode ray tube in displaying the input waveform directly on the display screen of the cathode ray tube, for applying a signal to the electron gun of the scan converter storage tube to cause the same to emit the electron beam in writing the input waveform on the storage target of the scan converter storage tube, and, in reading the waveform from the storage target of the scan converter storage tube and displaying the waveform on the display screen of the cathode ray tube, for applying an intensity signal representative of the waveform being read from the scan converter storage tube to the electron gun of the cathode ray tube; and

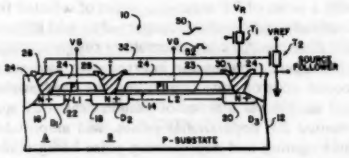
(h) a position corrector circuit associated with the sweep speed selector means for producing a correction signal in proportion with the selected sweep speed in order to eliminate the difference between the positions in the second directions of the input waveform displayed on the display screen of the cathode ray tube directly from the signal input and of the waveform displayed thereon after having been stored in the scan converter storage tube, the position corrector circuit delivering the correction signal to the second deflection circuit.

4,542,340

TESTING METHOD AND STRUCTURE FOR LEAKAGE CURRENT CHARACTERIZATION IN THE MANUFACTURE OF DYNAMIC RAM CELLS

Satya N. Chakravarti, Hopewell Junction, N.Y.; Paul L. Garbarino, Ridgefield, Conn., and Donald A. Miller, Fishkill, N.Y., assignors to IBM Corporation, Hopewell Junction, N.Y.

Filed Dec. 30, 1982, Ser. No. 454,900
Int. Cl.[4] G01R *31/26, 31/00*
U.S. Cl. 324—158 R **14 Claims**



1. A method of testing integrated circuits to determine or measure significant leakage currents, comprising the steps of:

forming, at a test site within a semiconductor wafer, a testing structure which includes (1) at least two gate-controlled diodes, the individual gates of which have markedly different perimiter-to-area ratios, and (2) an additional metallurgical junction common to said at least two gate-controlled diodes, said individual gates overlying one of said gate-controlled diodes and said common junction respectively;

connecting said two gate-controlled diodes and said common junction to a voltage source;

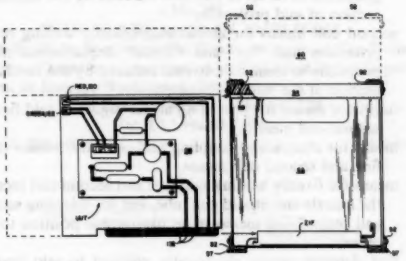
testing each of said gate-controlled diodes by alternately varying the gate voltage applied to one of said two diodes while maintaining the gate of the other diode at an appropriately low potential, so as to obtain the relationship between reverse current and gate voltage for each diode, whereby the perimeter contributed leakage current component is separated from the area contributed component.

4,542,341

ELECTRONIC BURN-IN SYSTEM

Anthony Santomango, West Peabody, and Nicholas N. Hatheway, Jr., Newbury, both of Mass., assignors to Artronics Corporation, Danvers, Mass.

Filed Jan. 4, 1982, Ser. No. 336,781
Int. Cl.[4] G01R *31/02, 31/28*
U.S. Cl. 324—158 F **4 Claims**



1. A system for performing electronic burn-in testing of module from a source of test voltages comprising:

a rack in the form of a skeletal frame structure, a removable tray slidable into the rack, a removable daughter board receivable in the tray,

the rack having support means for receiving and releaseably supporting at least one removable tray, at least one power interface assembly on the rack for connecting the rack to the source of test voltages, a plurality of releasable electric connectors on the interface assembly for making electrical connection to th eremovable tray,

the tray including a mother board circuit having a plurality of conductive paths, each path being connected to an electric contact that is engageable with one of the releasable connectors on the interface assembly when the tray is slid into the rack,

means on the tray to receive and releasably support the daughter board, a plurality of releasable electric connectors on the mother board each connected to a conductive path, a plurality of electric contacts on the daughter board each of which is engageable with a releaseable connector on the mother baord when the daughter board is inserted into the tray,

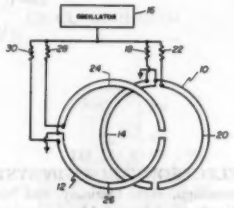
a module on the daughter board hardwired to at least one contact on the daughter board to recieve a test voltage from the mother board the daughter board containing signal means to indicate the presence of test voltage across the module.

4,542,342

APPARATUS FOR MEASURING PROJECTILE'S TRANSVERSE DISPLACEMENT AT GUN MUZZLE

Jimmy Q. Schmidt, Baltimore, and Rurik K. Loder, Havre de Grace, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 15, 1982, Ser. No. 418,325
Int. Cl.[4] G01B 7/14; G01P 3/66
U.S. Cl. 324—207 7 Claims



1. An apparatus for measuring a projectile's transverse displacement at muzzle exit of a gun tube which comprises:

first coil means for electromagnetically sensing relative proximity and "left" and "right" displacement of said projectile in terms of currents induced by the mechanical motion of said projectile;

second coil means for electromagnetically sensing relative proximity and "up" and "down" displacement of said projectile in terms of currents induced by the mechanical motion of the said projectile;

oscillator means for providing an RF signal to said first and second coil means;

means for electrically coupling said oscillator means to said first and second coil means;

means for fixedly holding said first and second coil means to the muzzle end of said gun tube, and for orienting said first and second coil means in an orthogonal position to each other;

first detector means electrically coupled to said first coil means for amplitude detecting changes in RF signals generated across a "left" sensor segment of said first coil means, and for generating a "left" output pulse;

second detector means electrically coupled to said first coil means for amplitude detecting changes in RF signals generated across a "right" sensor segment of said first coil means, and for generating a "right" output pulse;

third detector means electrically coupled to said second coil means for amplitude detecting changes in RF signals generated across an "up" sensor segment of said second coil means, and for generating an "up" output pulse;

fourth detector means electrically coupled to said second coil means for amplitude detecting changes in RF signals generated across a "down" sensor segment of said second coil means, and for generating a "down" output pulse;

first differential amplifier means for generating a left-right differential output signal which is a function of the difference in amplitude of said "left" and "right" output pulses;

first summing amplifier means for generating a left-right summing output signal which is a function of the sum of said "left" and "right" output pulses;

second differential amplifier means for generating an up-down differential output signal which is a function of the difference in amplitude of said "up" and "down" output pulses; and

second summing amplifier means for generating an up-down summing output signal which is a function of the sum of said "up" and "down" output pulses;

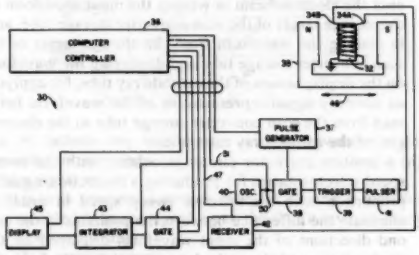
wherein said "left-right", up-down differential output signals and said left-right and up-down summing signals are recorded for computation of angle and magnitude of displacement of said projectile in relationship to the bore axis of said gun tube.

4,542,343

COMPUTER-CONTROLLED, PORTABLE PULSED NMR INSTRUMENT AND METHOD OF USE WHEREIN DEPOLARIZATION IS ULTRASHORTENED USING PSEUDO RANDOMLY SPACED AND ORIENTED RF DEPOLARIZATION PULSES

Robert J. S. Brown, Fullerton, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jun. 17, 1983, Ser. No. 505,521
Int. Cl.[4] G01R 33/08
U.S. Cl. 324—307 11 Claims



1. Automatic apparatus for swiftly determining fluid-flow properties of a rock sample based on NMR response of hydrogen nuclei of interstitial fluids within pore spaces of said sample in which pseudo random depolarizing pulses must be introduced to increase data-throughput efficiency (DTE) comprising:

(a) magnet means for producing a DC magnetic field acting on said rock sample, said magnetic field having an intensity of at least 1 kilogauss and an inhomogeneity of at least D gauss to aid in providing a series of nuclear magnetization build-ups associated with said interstitial fluids within said sample as a function of time;

(b) RF coil means acting at right angles to said DC magnetic field;

(c) transmitter means including digital control means for generating a first and a second control code associated with a series of RF magnetic pulses of selected frequency, amplitude and duration, connected to said RF coil means, said first control code controlling the production of said RF magnetic pulses for interrogating said sample, said second control code controlling the depolarizing of the said sample via a series of pseudo randomly spaced and oriented RF depolarizing pulses, said amplitude of each interrogating and depolarizing pulse being controlled to be at least greater than the variation D in said DC field over of said sample;

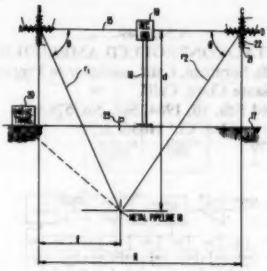
(d) receiver means connected to said digital control means and to said RF coil means for generating via a third control code associated with a plurality of time windows, output signals proportional to said nuclear magnetic resonance response of said interstitial fluids;

(e) said transmitter means including said digital control means providing via said depolarizing code an extremely short depolarizing period, so that said sample can be repetitively interrogated to serially indicate nuclear magnetization relaxation.

4,542,344
DETECTING BURIED PIPELINE DEPTH AND LOCATION WITH ELECTROMAGNETIC TRIANGULATION

Glenn T. Darilek, San Antonio, and Edward H. Cooper, Jr., Somerset, both of Tex., assignors to Corrosion Logging Service International, Lafayette, La. and Texas Gas Development Corporation, Owensboro, Ky.

Filed Sep. 2, 1983, Ser. No. 528,892
Int. Cl.[4] G01V *3/11, 3/165*
U.S. Cl. 324—326 **4 Claims**



2. In instrumentation for determining the depth and offset position of a buried pipeline, or like buried conductor, from a surface located instrument sensing position, having an antenna array disposing two sets of two orthogonally disposed magnetic field detectors at a predetermined spacing apart and predetermined spacing from the surface, the improvement comprising, means for inducing an electromagnetic signal into the buried pipeline to radiate signals along the pipeline detectable by said detectors which are readily processable to produce pipeline depth and location data, computation means for processing radiated signals detected from the pipeline by the four detectors to calculate from the ratios of the voltages detected by the respective antennas in said sets the depth of the pipeline below the surface and to indicate offset of the pipeline between the sets of detectors with the detector sets respectively disposed on opposite sides of the pipeline, means for multiplexing the signals detected by the four detectors into a single channel amplifier, automatic gain control means for the amplification channel operable to stabilize the gain as a function of the accumulated strength of the four signals produced by the detectors, and means for permitting each of the amplified individual multiplexed signals from the respective detectors to vary instantaneously.

4,542,345
MULTI-ELEMENT THERMOELECTRIC NON-DESTRUCTIVE TESTING DEVICE AND METHOD

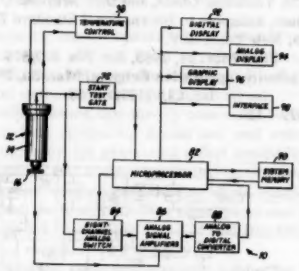
Walter Tomasulo, Wayne, N.J., assignor to Technicorp, East Rutherford, N.J.

Filed May 9, 1983, Ser. No. 492,698
Int. Cl.[4] G01N *25/00*
U.S. Cl. 324—451 **19 Claims**

1. A non-destructive testing device used for identifying a given unknown material utilizing information obtained from a plurality of thermoelectric junctions established between the testing device and the unknown material, the testing device comprising:

a plurality of thermoelectric junction-forming test elements, each test element having a known characteristic selected to be different from the corresponding selected known characteristics of the other test elements such that thermoelectric junctions established between the test elements and the given unknown material will produce different thermoelectric information for each junction;

test means for presenting each test element to the given unknown material and establishing the thermoelectric information means for receiving the thermoelectric information from each thermoelectric junction and processing the thermoelectric information received from all the thermo-

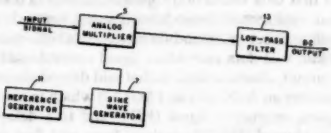


electric junctions to provide a set of composite characteristics for identifying the given unknown material based upon the set of composite characteristics derived from the thermoelectric information received from all of the thermoelectric junctions.

4,542,346
WIDE-RANGE LOCK-IN AMPLIFIER

David R. McNeilly, Maryville, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 7, 1982, Ser. No. 447,728
Int. Cl.[4] H03D *3/06*
U.S. Cl. 328—165 **4 Claims**



1. A lock-in amplifier for detecting a particular frequency component of an input signal, comprising:

a first sine wave generating means responsive to an input reference signal at an input thereof having a frequency equal to the frequency of said component of said input signal to be detected for generating a first sine wave reference signal at an output thereof which is equal in frequency to and 90° out-of-phase with said input reference signal;

a second sine wave generating means responsive to the output of said first sine wave generating means for generating a second sine wave reference signal at an output thereof which is equal in frequency to and in phase with said input reference signal;

a first multiplier means having a first input for receiving said input signal and a second input for receiving said first sine wave reference signal for generating a first dc signal at an output thereof which is a product of said component of said input signal to be detected and said first sine wave reference signal;

a second multiplier means having a first input for receiving said input signal and a second input for receiving said second sine wave reference signal for generating a second dc signal at an output thereof which is a product of said component of said input signal to be detected and said second sine wave reference signal; and

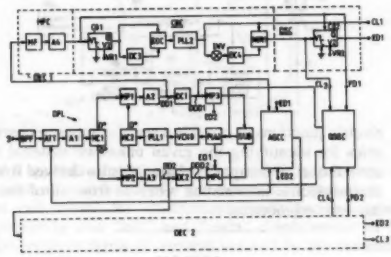
first and second low-pass filtering means connected respectively in series with the outputs of said first and second multiplier means.

4,542,347

DEMODULATOR CIRCUIT WITH INTEGRATED AUTOMATIC GAIN CONTROL

Guido A. M. Verfaillie, Ghent, and Dirk Breynaert, Temse, both of Belgium, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 21, 1983, Ser. No. 477,575
Claims priority, application Belgium, Mar. 30, 1982, 59652
Int. Cl.⁴ H03D *3/00*
U.S. Cl. 329—124 **14 Claims**



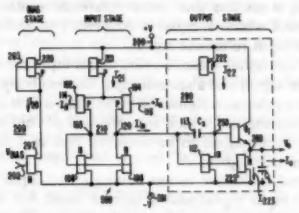
1. Demodulator circuit for demodulating a suppressed carrier phase modulated data input signal, including a carrier recovery circuit providing orthogonal reference carrier signals, first and second demodulation circuits for demodulating said input signal with respective ones of said orthogonal reference carrier signals to provide first and second demodulated signals respectively, at least one data estimation circuit for deriving a first data estimation signal from said first demodulated signal, said second demodulated signal being delayed to obtain a delayed second demodulated signal which in combination with said first data estimation signal controls said carrier recovery circuit, characterized in that said demodulator circuit further includes an AGC circuit (AGCC) which in response to said first data estimation signal (ED1) and to a delayed first demodulated signal (DDD1) derived from said first demodulated signal (DD1) provides an AGC output signal.

4,542,348

HIGH EFFICIENCY IGFET OPERATIONAL AMPLIFIER

Charles H. Lucas, Newport Beach, and Lanny L. Lewyn, Palo Alto, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 24, 1983, Ser. No. 544,766
Int. Cl.⁴ H03F *3/30, 3/45*
U.S. Cl. 330—253 **7 Claims**



1. An improved operational amplifier circuit including an input stage and an output stage,

said output stage comprising,

a current conducting device connected to receive a signal from the output terminal of said input stage,

first FET means connected to the conduction path of said current conducting device, and

second FET means directly connected to the control electrode of said current conducting device,

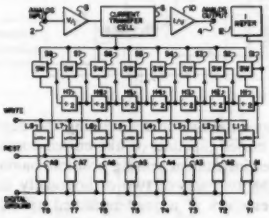
said first and second FET means having their control electrodes directly connected to said output terminal of said input stage.

4,542,349

DIGITAL CONTROLLED AMPLIFIER

Werner H. Hoeft, Saratoga, Calif., assignor to Precision Monolithics, Inc., Santa Clara, Calif.

Filed Feb. 10, 1984, Ser. No. 578,971
Int. Cl.⁴ H03G *3/20*
U.S. Cl. 330—279 **12 Claims**



1. A digital controlled amplifier, comprising:

an input terminal for receiving an analog signal to be amplified,

an output terminal for receiving an amplified analog signal,

a current transfer circuit adapted to receive an input current signal and to produce an output current signal in response thereto, said current transfer circuit including control terminal means to receive a control signal, said control signal governing the magnitude of the output current signal relative to the input current signal,

input circuit means connected between the input terminal and the current transfer circuit for presenting an analog signal at the input terminal as an input current signal for the current transfer circuit,

output circuit means connected between the current transfer circuit and the output terminal for presenting an output current signal from the current transfer circuit as an output analog signal at the output terminal,

means for producing a reference current,

a plurality of bit circuits adapted to produce a corresponding plurality of bit currents, said bit currents being progressively decremented with respect to the reference current and to each other,

a plurality of digital input circuits, corresponding in number to the number of bit circuits, for receiving a multi-bit digital control signal, and

a plurality of bit switches, each switch connected to interface between a respective digital input circuit, a respective bit circuit and the control terminal means for the current transfer circuit, each bit switch completing or interrupting a circuit connection between its respective bit circuit and the control terminal means in response to the digital signal at its respective digital input circuit, whereby as a collective result of the operation of each of the bit switches a control signal is applied to the current transfer circuit to control the magnitude of the output analog signal at the output terminal.

4,542,350

MONOLITHIC INTEGRATED CIRCUIT DEVICE INCLUDING AC NEGATIVE FEEDBACK TYPE HIGH FREQUENCY AMPLIFIER CIRCUIT

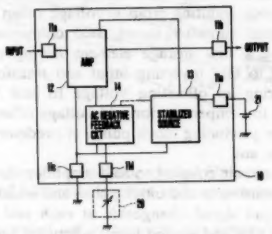
Yukio Akazawa, Atsugi; Noboru Ishihara, Zama, and Mamoru Ohara, Atsugi, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed Jul. 19, 1983, Ser. No. 515,280

Claims priority, application Japan, Jul. 19, 1982, 57-125366; Aug. 9, 1982, 57-137195; Aug. 16, 1982, 57-141984

Int. Cl.[4] H03F *1/34;* H03G *3/12*

U.S. Cl. 330—293 **26 Claims**



1. A monolithic integrated circuit device including an AC negative feedback type high frequency amplifier circuit comprising:

a substrate on which said monolithic integrated circuit device is formed; and

an AC negative feedback circuit for said high frequency amplifier circuit including a semiconductor impedance element having a junction capacitance of a diode supplied with a reverse bias voltage and connected to an external terminal on said substrate, which is connected to a variable control means for adjusting an amount of AC feedback of said high frequency amplifier circuit.

4,542,351

PLL FOR REGENERATING A SYNCHRONIZING SIGNAL FROM MAGNETIC STORAGE

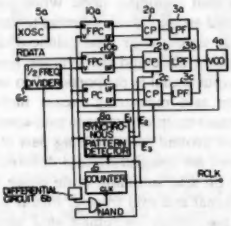
Toshiro Okada, Machida, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 8, 1982, Ser. No. 415,797

Claims priority, application Japan, Sep. 8, 1981, 57-28804

Int. Cl.[4] H03L *7/10*

U.S. Cl. 331—11 **7 Claims**



1. A phase-locked loop circuit for receiving an input signal and providing a signal synchronized with the input signal, the input signal having a synchronizing signal portion formed by a constant frequency signal and a data signal portion formed by a non-constant frequency signal, said phase-locked loop circuit comprising:

a reference frequency signal generator for generating a reference frequency signal;

a voltage controlled oscillator for outputting an output signal which functions as a clock signal;

frequency phase comparing means, operatively connected between said voltage controlled oscillator and said reference frequency signal generator, for detecting the frequency difference and the phase difference between the reference frequency signal and the output signal of said voltage controlled oscillator and outputting a first output signal;

phase comparing means, operatively connected to receive the clock signal and the input signal, for detecting the phase difference between the input signal and the clock signal and outputting a second output signal;

first controlling means, operatively connected between said frequency base comparing means and said voltage controlled oscillator, for generating a first controlling signal for controlling said voltage controlled oscillator during at least a portion of the synchronizing signal portion of the input signal, the first controlling signal generated in accordance with the first output signal of said frequency phase comparing means;

second controlling means, operatively connected between said phase comparing means and said voltage controlled oscillator, for generating a second controlling signal for controlling said voltage controlled oscillator during the data signal portion, the second controlling signal generated in accordance with the second output signal of said phase comparing means, the first and second controlling signals being combined to generate an input control signal, the input control signal controlling the oscillation frequency of the voltage controlled oscillator.

4,542,352

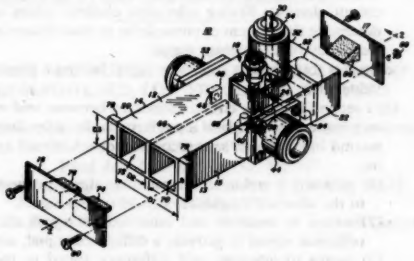
CAVITY OSCILLATOR WITH UNDESIRED MODE ABSORBING WAVEGUIDES FOR LINEAR FM

Francis R. Yester, Jr., Arlington Heights; Paul H. Gailus, Chicago, and Edward V. Louis, Elgin, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 17, 1983, Ser. No. 505,568

Int. Cl.[4] H03B *5/18, 7/14;* H03C *3/08, 3/20*

U.S. Cl. 331—96 **35 Claims**



1. A modulated elongate cavity oscillator having minimized modulation nonlinearities comprising:

a first cavity having dimensions which determine the fundamental resonant frequency of the oscillator;

a gain element disposed in said first cavity that provides amplification to sustain oscillation;

reactance means disposed in said first cavity for modulating the fundamental frequency;

a first waveguide means contiguously coupled to said first cavity for absorbing modes higher than the mode of said fundamental frequency which have an electric field maxima concurrent with the longitudinal center line of said first cavity; and

a second waveguide means contiguously coupled to said first

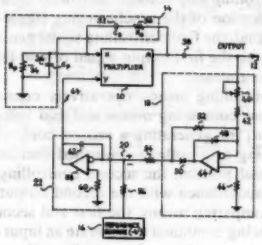
cavity for absorbing modes higher than the mode of said fundamental frequency which have an electric field minima concurrent with the longitudinal center line of said first cavity, said first and second waveguide means providing effective attenuation of the higher order modes such that modulation nonlinearities due to the existence of higher order modes are substantially eliminated.

4,542,353

SINE WAVE GENERATOR

Daniel W. Sexton, Roanoke, Va., assignor to General Electric Company, Salem, Va.

Filed Dec. 5, 1983, Ser. No. 558,223
Int. Cl.⁴ H03K *3/02*
U.S. Cl. 331—143 **12 Claims**



1. A sine wave generator circuit, for generating a sine wave output signal, comprising:

(a) multiplying means including first and second input terminals for receiving, respectively, first and second input signals of varying magnitude and further including an output terminal for providing said sine wave output signal as a function of the product of said first and second input signals;

(b) a first feedback circuit connected between said output terminal and said first input terminal for providing said first input signal, said first feedback path including circuit elements for providing a phase delayed representation of said output signal and serving as said first input signal, said circuit elements having selectable electric values which determine the amount of phase delay to thus determine the frequency of said output signal;

(c) means to provide a reference signal having a prescribed value; and

(d) a second feedback circuit connected between said output terminal and said second input terminal for providing said second input signal, said second feedback circuit including,

(1) means to provide an intermediate signal proportional to the absolute magnitude of said output signal,

(2) means to combine said intermediate signal and said reference signal to provide a difference signal, and,

(3) means to integrate said difference signal to thereby develop said second input signal.

4,542,354

DELTA-SIGMA PULSE MODULATOR WITH OFFSET COMPENSATION

Michael A. Robinton, Palo Alto, and Alan H. Starkie, San Jose, both of Calif., assignors to Robinton Products, Inc., Sunnyvale, Calif.

Filed Aug. 1, 1983, Ser. No. 518,820
Int. Cl.⁴ H03K *13/03, 13/22*
U.S. Cl. 332—11 D **16 Claims**

1. A modulator for converting an input signal to an output pulse train which varies between two levels and which has an average level over time proportional to the input signal comprising:

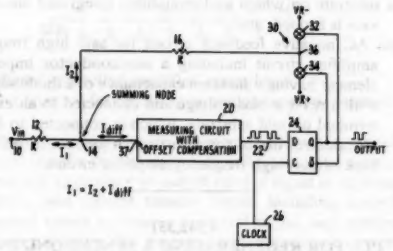
means for supplying said input signal to a summing node;

switch means for supplying a second signal to said summing node selected from at least two different reference signals, wherein the difference at any time between said input signal and said second signal is a difference signal;

measuring means for integrating the difference signal at said summing node and for determining when the integrated difference signal reaches a threshold level, said measuring means including an amplifier element having inverting and non-inverting inputs and an output, with said non-inverting input coupled to a common ground and said inverting input coupled to said summing node and offset compensation means for substantially eliminating any offset error resulting from a voltage offset existing between said amplifier inputs, said compensation means including a first storage element having one terminal coupled to said inverting input and transfer means for transferring an offsetting voltage to said first storage element to compensate for said voltage offset;

a clock for producing clock pulses at predetermined clock intervals; and

a bistable circuit coupled to said amplifier element output and responsive to said clock pulses and which produces a first output signal changeable at each said clock pulse between first and second levels whenever said integrated

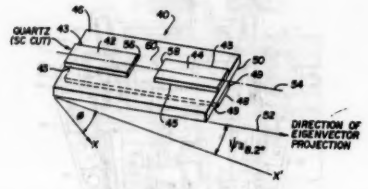


difference signal has crossed said threshold level during a clock interval, said switch means being responsive to said bistable circuit such that one of said reference signals is supplied to said summing node when said first output signal is at said first level and another reference signal is supplied to said summing node when said first output signal is at said second level, wherein the average value of the reference signals over time balances said input signal at said summing node and the average level ofer time of said first output signal is proportional to said input signal and wherein said measuring means includes a second storage element coupled between said summing node and said common ground for providing part of a passive integration means for integrating said difference signal, with the voltage on said summing node being said integrated difference signal and said transfer means includes control means for alternately switching said amplifier element between a nulling mode wherein a second terminal of said first storage element is coupled to said common ground and a feedback path is provided between said inverting input and said output of said amplifier element such that any voltage offset is stored in said first storage element and a measuring mode wherein said second terminal of said first storage element is coupled to said summing node such that said stored voltage offset is in series with said inverting input.

4,542,355
NORMAL COORDINATE MONOLITHIC CRYSTAL FILTER

Arthur Ballato, Long Branch, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 7, 1984, Ser. No. 669,147
Int. Cl.⁴ H03H *9/56, 9/125*
U.S. Cl. 333—191 **16 Claims**



1. A pizeoelectric monolithic crystal filter compensated for the effects of electrode stresses and temperature transients, comprising:

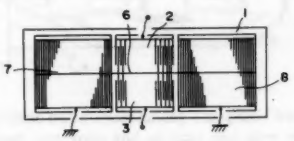
a doubly rotated cut of piezoelectric material formed as a plate-like body having a pair of surfaces comprising opposing major faces; and

electrode means, substantially aligned with the projection of the eigenvector (normal coordinate) for the desired operating mode, formed on said surfaces in an energy trapping configuration, and including an electrode gap on at least one of said surfaces, said electrode gap being substantially perpendicular to the projection of the eigenvector, said eigenvector or normal coordinate being the direction of particle motion within said body when excited in said desired operating mode.

4,542,356
HIGH FREQUENCY NARROW-BAND MULTI-MODE FILTER

Yuzo Nakazawa; Kazuo Ono; Masaki Tanaka; Takao Morita, and Takefumi Kurosaki, all of Samukawa, Japan, assignors to Toyo Communication Equipment Co., Ltd., Kanagawa, Japan

Filed Jul. 26, 1983, Ser. No. 517,511
Claims priority, application Japan, Jul. 26, 1982, 57-130140
Int. Cl.⁴ H03H *9/145, 9/64*
U.S. Cl. 333—195 **15 Claims**

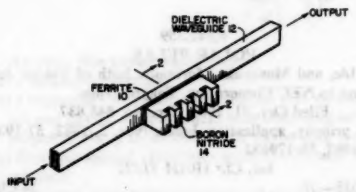


1. A high-frequency narrow-band pass multi-mode filter comprising first and second resonators arranged adjacent to each other, each of said resonators having the same resonance frequency and comprising a pair of comb-type interdigital transducer electrode arrays, the electrodes of said arrays being interleaved with each other, and a common bus bar provided between said first and second resonators, said first and second resonators being arranged in directions perpendicular to the propagation directions of waves excited by said resonators and in close proximity to each other on a piezoelectric substrate so that acoustic coupling between said first and second resonators is attained, thereby causing first and second resonance frequencies of different vibrating modes, the overlap of the electrodes of said respective pairs of electrode arrays of said first and second resonators defining respective first and second acoustic aperatures of width w and the distance between said first and second acoustic aperatures defining a gap g, said filter utilizing said first and second resonance frequencies of different vibration modes generated by the acoustic coupling, wherein said width w and gap g satisfies the relation $w \leqq 20\lambda$ and $g \leqq 6\lambda$, where λ is the wavelength of the wave excited by said resonators.

4,542,357
DIELECTRIC WAVEGUIDE FERRITE RESONANCE ISOLATOR

Richard A. Stern, Allenwood, and Richard W. Babbitt, Fair Haven, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 27, 1983, Ser. No. 517,613
The portion of the term of this patent subsequent to Jul. 10, 2001, has been disclaimed.
Int. Cl.⁴ H01P *1/365, 1/30*
U.S. Cl. 333—24.2 **20 Claims**

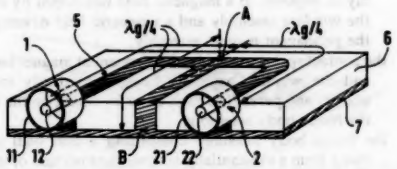


1. In a dielectric waveguide ferrite resonance isolator capable of operating in the millimeter wave frequency range in a dielectric waveguide transmission line in which a thin rectangular hexagonal ferrite material is affixed to a side of the dielectric waveguide and then placed between the pole pieces of an electromagnet in order to magnetize and fully orient the ferrite material, the improvement of positioning a grooved block of dielectric having a low dielectric constant and high thermal conductivity against the face of the hexagonal ferrite so as to use the high thermal conductivity dielectric as a heat sink thereby extracting heat from the hexagonal ferrite.

4,542,358
DEVICE PROTECTING A COAXIAL CABLE AGAINST HIGH-POWERED, LOW-FREQUENCY SPURIOUS PULSES

Joël Boby, Montfermeil, France, assignor to Societe Anonyme Dite: les Cables de Lyon, Clichy, France

Filed Jan. 4, 1983, Ser. No. 455,457
Claims priority, application France, Jan. 5, 1982, 82 00032
Int. Cl.⁴ H01P *5/00*
U.S. Cl. 333—246 **6 Claims**



1. A device protecting a coaxial cable against high-powered low-frequency spurious pulses, said device comprising: quarter-wave length transmission line impedance transformers made of a microstrip, at least one portion (5) of said microstrip

being equal in length to an odd multiple of λg/4, wherein λg is the wave length of a guided wave on said microstrip, said portion being curved in the same plane in order to reduce the overall dimensions of the device; said device further comprising coaxial plugs (1, 2) for the input and output of operating signals, said impedance transformers forming a T-junction, having two lateral arms and a transverse arm of which each arm being a quarter wavelength at the frequency of the design signal, said T-junction consisting of said microstrip (5) being disposed on a dielectric substrate (6), said substrate being integral with a ground plate (7), said two lateral arms and said transverse arm of said T-junction being configured in the shape of an E, each of the two lateral arms being curved so as to connect with a center conductors (12, 22) of said coaxial plug (1, 2), an outside shield (11, 21) of each coaxial plug being connected to said ground plate (7) and the center transverse arm of the E being bent over the side of the substrate (6) and connected to said ground plate (7).

4,542,359

POLAR RELAY

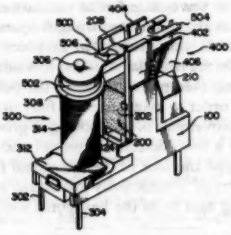
Tatsumi Ide, and Masayuki Morimoto, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Oct. 31, 1983, Ser. No. 546,837

Claims priority, application Japan, Nov. 2, 1982, 57-193213; Sep. 28, 1983, 58-179632

Int. Cl.⁴ H01H *51/22*

U.S. Cl. 335—78 **24 Claims**



1. A polar relay comprising:

a frame body assembly made of an insulating material and including a flat base;

a contact spring assembly mounted in one end portion of said base;

a permanent magnet assembly mounted on the base to neighbor said contact spring assembly;

a winding assembly mounted in the other end portion of the base to neighbor said permanent magnet assembly; and

an armature assembly for driving the contact spring assembly in response to a magnetic field developed by exciting the winding assembly and a magnetic field developed by the permanent magnet assembly;

the contact spring assembly, the permanent magnet assembly and the winding assembly being individually mounted upright and parallel to each other by fitting on the base of the frame body assembly;

the frame body assembly comprising a first wall portion rising from a substantially intermediate portion of the base to isolate longitudinally opposite ends of the base from each other, a second wall portion and a third wall portion each being contiguous with said first wall portion and rising from the base to define a substantially U-shaped cross section in cooperation with the first wall portion, and a shelf extending from the first wall portion.

4,542,360

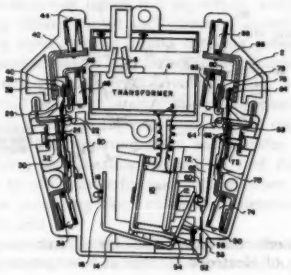
ELECTROMAGNETIC RELAY HAVING DUAL ACTING ARMATURE

Elwyn H. Olson, St. Paul, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 12, 1983, Ser. No. 541,395

Int. Cl.⁴ H01H *51/06*

U.S. Cl. 335—203 **11 Claims**



1. An electromagnetic relay comprising

a U-shaped armature,

a single pivot means for said armature,

an actuating coil means located in a bight of said armature for effecting a pivotal movement of said armature on said pivot means, said coil means including a core means extending between the legs of said U-shaped armature and said armature rotating on said pivot means in a plane parallel to a plane containing a longitudinal axis of said core means,

a movable electrical contact means selectively moved by said armature and

a fixed electrical contact means arranged to cooperate with said movable contact means, wherein said movable contact means includes a double faced electrical contact and said fixed contact means includes a first electrical contact arranged to contact one face of said double faced contact in an energized state of said relay and a second electrical contact arranged to contact another face of said double faced contact in a deenergized state of said relay.

4,542,361

PERMANENT MAGNET FIELD DIVERTED TO DO USEFUL WORK

Patrick E. Cavanagh, Toronto, Canada, assignor to Maghemite Inc., Mississauga, Canada

Filed May 21, 1984, Ser. No. 612,242

Int. Cl.⁴ H01F *7/00*

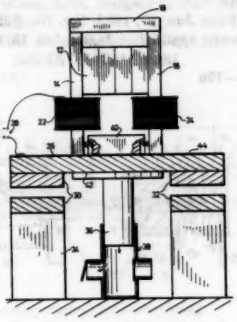
U.S. Cl. 335—230 **10 Claims**

1. A method of manipulating permanent magnets, which comprises:

diverting the field of a first permanent magnet by an opposing magnetic field sufficient to permit a second opposing permament magnet to approach the first permanent magnet without the application of undue force,

restoring the intensity of the field of the first permanent

magnet to act on the second permanent magnet to repel the same, and



harnessing the force resulting from the repulsion of the second magnet by the first magnet on restoring the field to do useful work.

4,542,362

ELECTRICAL TRANSFORMERS WITH IMPROVED INSULATION AND COOLANT GUIDING

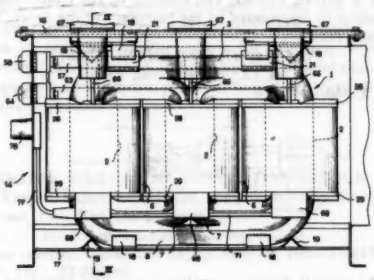
Jean-Claude Beisser, La Chaux de Fonds, France, assignor to Societe Nouvelle Transfix, Cahors Cedex, France

Filed Feb. 15, 1983, Ser. No. 466,660

Claims priority, application France, Feb. 19, 1982, 82 02753; Feb. 19, 1982, 82 02754

Int. Cl.⁴ H01F *27/08*

U.S. Cl. 336—60 **19 Claims**



1. An electric transformer having a magnetic frame provided with at least one yoke and at least one core which define together at least one substantially rectangular window, at least one high-voltage electric winding and at least one low-voltage electric winding being placed around an insulating tube and said tube being in turn placed around the magnetic core which is associated with said tube, a gap being provided between said tube and said core, wherein each end of the insulating tube extends axially beyond the electric windings carried thereon, wherein an annular spacer member is inserted between each annular extremity of the electric windings and the yoke and is provided opposite the magnetic core on the one hand with a first bearing surface located axially beyond the insulating tube and engaging the core in a centering relationship therewith and on the other hand with a second bearing surface located axially nearer to the windings than the first bearing surface and engaging the adjacent end of the insulating tube in a centering relationship therewith.

4,542,363

OPEN FUSE CUTOUT

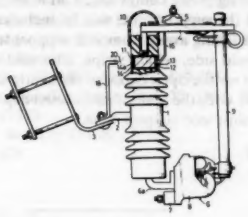
Kazuaki Kato, Chita, and Yuzo Nishi, Toki, both of Japan, assignors to NKG Insulators, Ltd., Nagoya and Takamatsu Electric Works, Ltd., Inuyama, both of, Japan

Filed May 1, 1984, Ser. No. 605,956

Claims priority, application Japan, May 10, 1983, 58-69515[U]

Int. Cl.⁴ H01H *39/00, 71/10*

U.S. Cl. 337—31 **5 Claims**



1. An open fuse cutout comprising:

(a) a mounting member;

(b) a supporting insulator supported on said mounting member and having an attachment hole extending substantially perpendicularly to an axis of the supporting insulator;

(c) first and second electrodes mounted on said supporting insulator;

(d) a fuse tube extending between and supported on said first and second electrodes;

(e) a grounding member attached to said mounting member;

(f) a lightning arrester element disposed in said attachment hole and covered fully with an insulating material, the axis of said lightning arrester element extending transversely of the axis of said supporting insulator, said lightning arrester element having a charging electrode and a grounding electrode extending through said insulating material on opposite ends of said lightning arrester element, said charging electrode and one of said frist and second electrodes forming a first confronting pair and said grounding electrode and said grounding member forming a second confronting pair; and

(g) at least one of said first and second confronting pairs defining a spark gap.

4,542,364

END CAP FOR AN ELECTRIC HIGH VOLTAGE FUSE

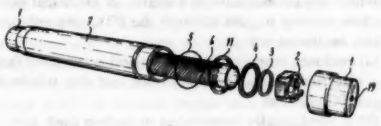
Derk van der Scheer, Goor, Netherlands, assignor to Hazemeijer B.V., Hengelo, Netherlands

Filed Mar. 16, 1984, Ser. No. 590,573

Claims priority, application Netherlands, Mar. 16, 1983, 8300953

Int. Cl.⁴ H01H *85/16*

U.S. Cl. 337—253 **17 Claims**



1. A tubular-shaped high voltage fuse, adapted to be filled with sand, comprising at least one first support tube of electrically insulating material, having applied thereon parallel fuse conductors running between the ends thereof, and an outer tube of electrically insulating material, surrounding said support tube, comprising:

(a) a cup-shaped end cap of electrically conducting material,

closed at one of its ends, the open end of which can be slipped over one end of said outer tube and can be fixed thereupon;

(b) a first tore-shaped, closed contact spring of electrically conducting and resilient material, which can be placed between the outer wall at one end of said support tube, in electrical contact with said fuse conductors and the inner wall of said end cap, said contact spring is dimensioned such, that after said end cap has been mounted, the center line of the support tube mainly will be kept in coincidence with the center line of said outer tube; and

(c) a spacing piece, comprising a lid to be placed on the open end of the support tube, said lid includes resilient strips at its side facing away from said support tube and extending from said side, which strips, after said end cap has been placed on the open end, are resiliently deformed when in contact with the wall of said closed cap end, pressing said lid against said support tube.

4,542,365

PTC CIRCUIT PROTECTION DEVICE

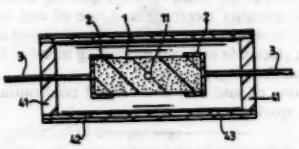
Mary S. McTavish, Fremont; Robert W. Stodieck, Palo Alto, and Frank A. Doljack, Pleasanton, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 349,505, Feb. 17, 1982, Pat. No. 4,481,498. This application Jul. 23, 1984, Ser. No. 633,175

The portion of the term of this patent subsequent to Nov. 6, 2001, has been disclaimed.

Int. Cl.[4] H01C *1/00, 7/02*

U.S. Cl. 338—20 **3 Claims**



1. A circuit protection device which comprises

(1) a PTC element composed of a conductive polymer composition which exhibits PTC behavior and which comprises a polymeric component and, dispersed in the polymeric component, a particulate conductive filler comprising carbon black;

(2) two electrodes which are electrically connected to the PTC element;

(3) two electrical leads, one connected to each electrode, which are connectable to a source of electrical power to cause current to pass through the PTC element; and

(4) an enclosure which

(a) encloses, is spaced apart from and is insulated from the electrical leads, the electrodes and the whole of the PTC element;

(b) is substantially impervious to carbon dust; and

(c) comprises two exit ports through each of which passes one of the electrical leads;

at least one of said electrical leads being electrically insulated over at least a substantial proportion of its length from the exit port through which it passes towards the electrode to which it is connected,

whereby the adverse effects of carbonaceous dust evolved by the PTC element when it is tripped are minimized.

4,542,366

ILLUMINATED VARIABLE RESISTOR

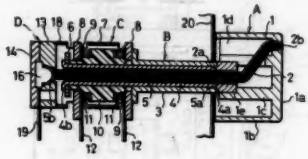
Akira Oyama, Miyagi, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Jun. 17, 1983, Ser. No. 505,198

Claims priority, application Japan, Jun. 18, 1982, 57-90190[U]

Int. Cl.[4] H01C *10/00*

U.S. Cl. 338—196 **4 Claims**



1. An illuminated variable resistor comprising a rotatable knob, a second optical guide member which is arranged in said knob with its one end located at a center of rotation of said knob and its other end located at a position spaced from the center of rotation, a variable resistance portion, a hollow shaft whose one end is coupled to a turning part of said variable resistance portion and whose other end is coupled to said knob, a light source portion, and is first optical guide member which is arranged inside said hollow shaft and which confronts said light source portion at one end thereof and said one end of said second optical guide member at the other end thereof, whereby a rotational position of said variable resistance portion can be seen on an end face of said knob.

4,542,367

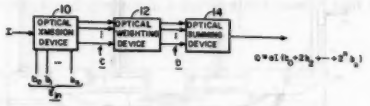
OPTICAL DIGITAL TO ANALOG CONVERTER

James S. Shreve, Fairfax, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 17, 1982, Ser. No. 378,677

Int. Cl.[4] H03K *13/02, 13/05*

U.S. Cl. 340—347 DA **17 Claims**



1. An optical digital to analog conversion apparatus comprising:

controllable density optical transmission device having multiple defined density states for transmission of coherent optical radiation therethrough as a plurality of optical signals having particular numerical values inputted thereto;

optical weighting means, positioned for receiving the plurality of optical signals from said optical transmission device, for providing different optical weights to each of said plurality of signals;

optical summing means, positioned for summing the plurality of weighted optical signals, for producing an output optical signal having an amplitude representing a combination of said plurality of particular numerical values;

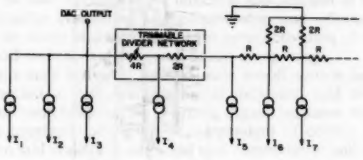
masking means providing an aperture for defining an output location for said output optical signal; and

a lens positioned with respect to said masking means and said summing means so that a fourier transform relationship exists therebetween.

4,542,368
TRIMMABLE RESISTIVE SCALING NETWORK SUITABLE FOR DIGITAL TO ANALOG CONVERTERS

William J. Lillis, Tucson, Ariz., assignor to Burr-Brown Corporation, Tucson, Ariz.

Filed Feb. 23, 1982, Ser. No. 351,501
Int. Cl.[4] H03K 13/02
U.S. Cl. 340—347 CC 8 Claims



1. A digital to analog converter comprising:

a first plurality of current source means, each of said first plurality of current source means for providing a predetermined current contribution in response to a control signal from said digital to analog converter;

a second plurality of current source means, each of said second plurality of current source means providing a predetermined current contribution in response to control signals;

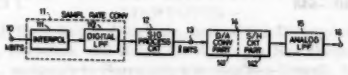
a R–2R resistance network coupled to a common terminal and having a group of said second plurality of current source means coupled to nodes of said R–2R resistance network;

a first controllable resistor means coupled between an output terminal of said digital to analog converter and said R–2R resistor network, said first controllable resistor means including a controllable resistor and a fixed resistor, wherein a one of said second plurality of current sources is coupled to said output terminal of said digital to analog converter through said controllable resistor and to said R–2R resistor network through said fixed resistor, said first controllable resistor means for adjusting relative current contribution of said one and said second plurality of current source means provided to said digital to analog output terminal.

4,542,369
DIGITAL-TO-ANALOG CONVERTING DEVICE

Masao Kasuga, Sagamihara, Japan, assignor to Victor Company of Japan, Ltd., Kanagawa, Japan

Filed Aug. 10, 1983, Ser. No. 522,057
Claims priority, application Japan, Aug. 19, 1982, 57-143626; Dec. 23, 1982, 57-230162
Int. Cl.[4] H03K 13/02
U.S. Cl. 340—347 DA 6 Claims



1. A digital-to-analog converting device comprising:

a signal processing circuit supplied with a discrete digital signal x_n at a time nT, where n is a natural number and T is a sampling period, for converting said discrete digital signal x_n into a digital signal y_n satisfying an equation

$$y_n = \sum_{i=0}^{N} x_{n-i} - \sum_{i=1}^{N} y_{n-i}$$

where N is a natural number greater than i;

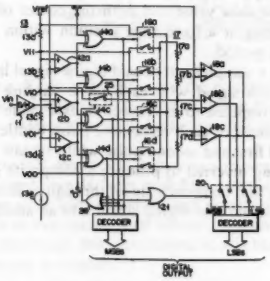
a digital-to-analog converter for converting the output digital signal y_n of said signal processing circuit into an analog signal having a continuous amplitude; and

an analog lowpass filter supplied with the output analog signal of said digital-to-analog converter, for eliminating frequency components substantially equal to or higher than ½ a sampling frequency F_s of the discrete input digital signal of said signal processing circuit.

4,542,370
CASCADE-COMPARATOR A/D CONVERTER

Hisashi Yamada, Yokohama, and Shoichi Shimizu, Fujisawa, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 17, 1982, Ser. No. 419,475
Claims priority, application Japan, Oct. 20, 1981, 56-167548; Oct. 20, 1981, 56-167550
Int. Cl.[4] H03K 13/175
U.S. Cl. 340—347 AD 21 Claims



1. An analog-to-digital converter comprising:

first comparison reference voltage providing means for providing a plurality of first comparison reference voltages of different magnitude to determine the quantization ranges of an analog input voltage to be converted into a digital signal;

first comparator means for comparing the analog input voltage with the first comparison reference voltages;

first decoding means for providing higher order bits of the digital signal in response to outputs of said first comparator means;

switching circuit means connected to receive the first comparison reference voltages from said first comparison reference voltage providing means and responsive to said first comparator means for providing two adjacent first reference voltages between which the analog input voltage lies to first and second outputs of said switching circuit means;

second comparison reference voltage providing means connected between said first and second outputs of said switching circuit means for providing a plurality of second comparison reference voltages within said two adjacent first reference voltages;

second comparator means for comparing the analog input voltage with the second comparison reference voltages; and

second decoding means for producing lower order bits of the digital signal in response to outputs of said second comparator means;

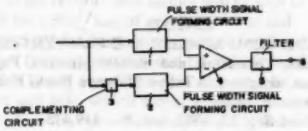
wherein said second comparison reference voltage providing means comprises a series combination of a plurality of capacitors of an equal capacitance value connected between said first and second outputs of said switching circuit means.

4,542,371

METHOD OF CONVERTING A DIGITAL SIGNAL INTO AN ANALOG SIGNAL AND A CONVERTER THEREFOR

Gohji Uchikoshi, Higashimurayama, Japan, assignor to Nakamichi Corporation, Tokyo, Japan

Filed Aug. 2, 1982, Ser. No. 404,619
Claims priority, application Japan, Aug. 11, 1981, 56-125486
Int. Cl.[4] H03K *13/02*
U.S. Cl. 340—347 DA 2 Claims



1. A method of converting a digital signal into an analog signal comprising the steps of:

converting said digital signal into a first pulse width signal with each pulse varying in its pulse width in response to its respective data value and with the center of each pulse width being at a fixed time position within a repetitive sampling period;

converting a complement of said digital signal into a second pulse width signal with each pulse varying in its pulse width in response to its respective data value and relative to said center of each respective pulse width;

mixing said first and second pulse width signals with one of them being inverted to produce a composite signal;

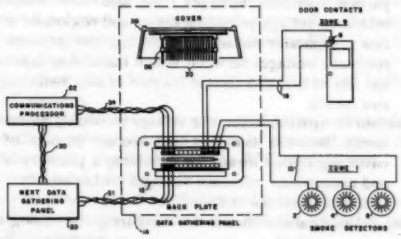
and passing said composite signal through a smoothing filter to demodulate said digital signal into an analog signal.

4,542,372

DATA DISTRIBUTION APPARATUS

Eugene J. Takach, Jr., Lake Zurich, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 28, 1983, Ser. No. 508,634
Int. Cl.[4] G08B *23/00*; H01R *13/50*
U.S. Cl. 340—500 10 Claims



7. An apparatus comprising:

connector means for providing a first plurality of electrical connectors for receiving electrical signals, and a second plurality of electrical connectors for supplying electrical signals and

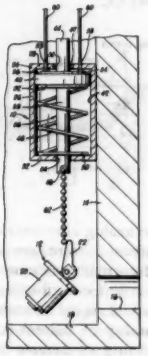
cover means for said connector means for electrically joining said first and second plurality of said electrical connectors in a predetermined pattern when said cover means is mounted on said connector means.

4,542,373

SMALL CRAFT PLUG DETECTOR

Edward E. Hillock, 6221 Lansbrook Ct., Oklahoma City, Okla. 73132

Filed Sep. 12, 1983, Ser. No. 531,090
Int. Cl.[4] G08B *21/00*
U.S. Cl. 340—568 16 Claims



1. A plug detection apparatus to indicate position of a drain plug in a small boat or craft, said detection apparatus comprising:

an indicator housing;

an indicator plunger in said housing having a first end and a second end opposite said first end, said plunger having a first position in which said first end of the plunger is substantially flush with an outer surface of said housing and a second position in which said first end extends outwardly away from said housing outer surface;

spring means to bias said plunger from said first position to said second position; and

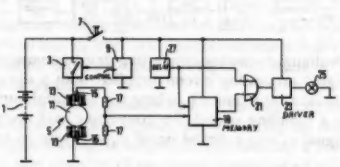
connecting means of predetermined length connecting said second end of said plunger to said drain plug, whereby, when said plug is installed in said boat, said plunger is in said first position, and when said plug is not installed, said spring means moves said plunger to said second position.

4,542,374

SWITCHING CIRCUIT FOR SUPERVISING THE DEGREE OF WEAR OF COMMUTATOR-CONTACTING CARBON BRUSHES

Otto Kollmannsberger, Moosburg, and Martin Schmid, Niederhornbach, both of Fed. Rep. of Germany, assignors to Steinbock GmbH, Moosburg, Fed. Rep. of Germany

Filed Mar. 17, 1983, Ser. No. 476,194
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1982, 3211251
Int. Cl.[4] G08B *21/00*
U.S. Cl. 340—648 1 Claim



1. A circuit for supervising the wear of carbon-brushes normally making contact with a commutator of a direct-current electric motor of an electrically operated vehicle powered by an accumulator, including a main on-off switch for supply-

ing power to said motor, electrically insulated control brushes carried by said carbon-brushes and movable therewith, and a warning signal indicator normally connected to said control brushes to provide a warning signal when said control brushes establish contact with said commutator upon a predetermined degree of wear of said carbon-brushes, said control brushes being connected to a memory means which controls said warning signal indicator and which is set when said control brushes contact said commutator, said memory means upon being set switches on said warning signal indicator independent of said control brushes contacting said commutator, and wherein a reset circuit resets said memory means upon activation of said main on-off switch, said resetting circuit comprising

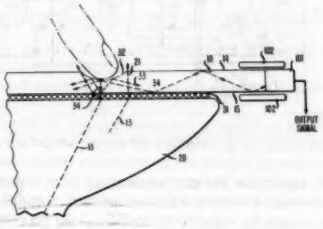
a delay means activated by said main on-off switch being connected to said warning signal indicator, said delay means switching on the warning signal indicator for a predetermined time interval independent of contact between said control brushes and said commutator, and said delay means resetting said memory means.

4,542,375

DEFORMABLE TOUCH SENSITIVE SURFACE

Harold G. Alles, Bridgewater, and Peter S. Kubik, South Plainfield, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 11, 1982, Ser. No. 347,877
Int. Cl.⁴ G09G *1/00*
U.S. Cl. 340—712 **23 Claims**



1. A touch sensitive device for use in conjunction with a signal source, said device comprising

spaced apart surfaces arranged such that signals are introduced between said surfaces so as to become entrapped within said device by total internal reflection between said surfaces as a result of a deformation of one of said surfaces of said device relative to the other of said surfaces, and

signal utilization means adapted to provide a distinctive output when said signals are so introduced between said surfaces.

4,542,376

SYSTEM FOR ELECTRONICALLY DISPLAYING PORTIONS OF SEVERAL DIFFERENT IMAGES ON A CRT SCREEN THROUGH RESPECTIVE PRIORITIZED VIEWPORTS

Leland J. Bass; Roy F. Quick, Jr., both of San Diego; Ashwin V. Shah, Encinitas, and Ralph O. Wickwire, San Diego, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Nov. 3, 1983, Ser. No. 548,430
Int. Cl.⁴ G09G *1/00*
U.S. Cl. 340—724 **10 Claims**

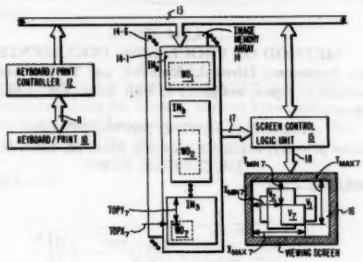
1. A system for electronically displaying portions of several different images on a screen; comprising:

a memory means for storing a plurality of said images;

a first control means including a means for storing first control signals that partition said screen into an array of blocks and define multiple prioritized viewports by indicating which of said blocks are included in each viewport;

said first control means also including a means for receiving input signals which identify a particular block of said screen and for utilizing them in conjunction with said first control signals to generate output signals which indicate the highest priority viewport that includes said particular block; and

a second control means including a means for storing second control signals for each of said viewports of the form $BA+(TOPY)(IW)(N)+TOPX-Xmin-(Ymin)(IW)(N)$, where BA is the base address of the image that is being displayed in the viewport, TOPX and TOPY give the position in blocks of the viewport relative to the image it



is displaying, Xmin and Ymin give the position in blocks of the viewport relative to the screen, IW is the width in blocks of a viewport, and N is the number of lines per block;

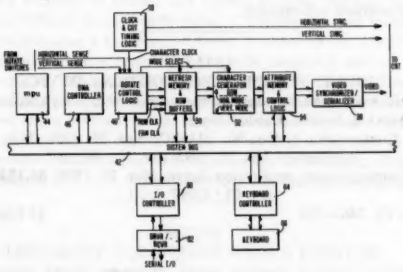
said second control means also including a means for utilizing said output signals from said first control means in conjunction with said second control signals to generate the address in said memory of several adjacent pixels in one line of the image that is correlated to said block of said highest priority viewport.

4,542,377

ROTATABLE DISPLAY WORK STATION

Mark D. Hagen, Rochester, Minn.; Peter J. Mendel, Lexington, Ky., and John L. Regehr, Stewartville, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 27, 1982, Ser. No. 453,019
Int. Cl.⁴ G09G *1/00*
U.S. Cl. 340—727 **5 Claims**



1. A display for presenting text in a first format having a greater number of text lines but a smaller number of characters per line, and a second format having a smaller number of lines but a greater number of characters per line, comprising:

(a) rectangular display means having a longer dimension and a shorter dimension;

(b) scanning means fixedly mounted to said display means for producing a set of scan lines always along one of said dimensions;

(c) switch means for selecting between said first and second formats;

(d) buffer means for storing characters to be shown on said display means in both said first and said second format, the number of said characters being at least the greater number of said text lines times the greater number of said characters per line; and

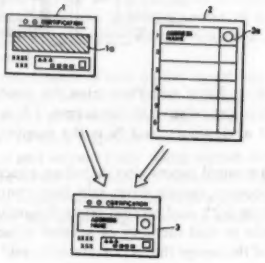
(e) addressing means for selecting characters from said buffer means, and for transferring said characters to said display means, in either of two different sequences in response to said switch means.

4,542,378

METHOD OF PROCESSING DOCUMENTS

Saburo Suganuma; Hiroyuki Kataoka, and Yoshio Arai, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 11, 1982, Ser. No. 357,128
Claims priority, application Japan, Mar. 12, 1981, 56-34632
Int. Cl.[4] G09G *3/00*
U.S. Cl. 340—734 **5 Claims**



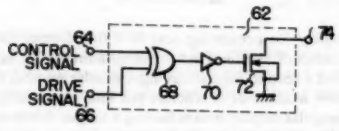
1. A method of processing documents, comprising the steps of: reading the format information of a first document from an image input means having a platen, storing the thus read format information in a memory section, reading selected information from predetermined positions in other documents by way of the platen, storing the thus read selected information in said memory section, electronically overlaying in the memory section the format information and the selected information from said other documents using a control section, outputting the thus overlaid information through a printer, and providing said first document as a blank form with areas designated for said overlaid information.

4,542,379

CIRCUIT FOR DRIVING A DISPLAY DEVICE

Kouichirou Satou, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 211,402, Nov. 28, 1980. This application Jan. 31, 1983, Ser. No. 462,697
Claims priority, application Japan, Nov. 29, 1979, 54-153605
Int. Cl.[4] G09F *9/00*
U.S. Cl. 340—758 **24 Claims**



1. A drive circuit for driving an LED display device comprising:

a first input terminal for receiving a high level voltage drive signal;

a second input for receiving a pulsing control signal;

a logic gate for providing an EXCLUSIVE OR of said drive signal and control signal; and

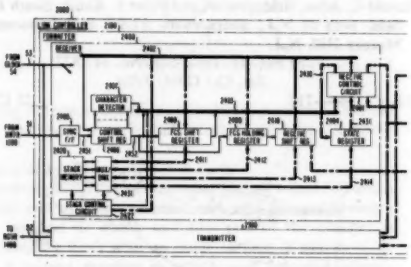
a switching transistor element connected between said display device and a reference potential, said transistor element being turned on according to the output of said logic gate.

4,542,380

METHOD AND APPARATUS FOR GRACEFUL PREEMPTION ON A DIGITAL COMMUNICATIONS LINK

Mark W. Beckner, Warrenville, and Thomas J. J. Starr, Wheaton, both of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 28, 1982, Ser. No. 454,172
Int. Cl.[4] H04Q *9/00*; H04J *6/00*
U.S. Cl. 340—825.5 **44 Claims**



1. A link controller for communicating from a plurality of user devices over a communications medium comprising

coupling means for selectively coupling said user devices to said communications medium for communication in frames, said coupling means being associated with a set of status variables collectively defining the present status of said coupling means,

selection means for selecting a given one of said user devices while a given other one of said user devices is coupled to said communications medium for communication,

means responsive to said selection means for transmitting a start preemption signal on said communications medium, and

means responsive to said selection means for saving values of said set of status variables,

wherein said coupling means is responsive to said selection means for interrupting a transmission to said communications medium of a first frame from said given other one of said user devices before a portion of said first frame is transmitted, and for transmitting to said communications medium a second frame from said given one of said user devices.

4,542,381

ADAPTIVE WINDOW CFAR APPARATUS

Randy L. Wilhelm, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 5, 1982, Ser. No. 432,881
Int. Cl.[4] G01S *7/34*
U.S. Cl. 343—5 CF **5 Claims**

1. An adaptive window CFAR apparatus comprising: first window means for receiving, storing and advancing a predetermined number of range data units;

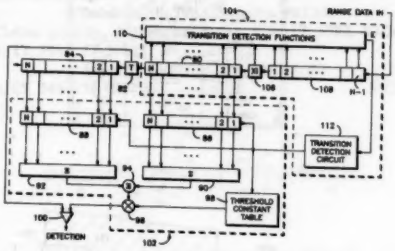
cell under test means coupled to said first window means for receiving a single range data unit therefrom, storing said range data unit and advancing said range data unit;

second window means coupled to cell under test means for receiving from said cell under test means, storing and advancing a predetermined number of range data units;

transition test cell means for receiving, storing and advancing a single range data unit, said transition test cell being coupled to said first window means;

third window means for receiving, storing and advancing predetermined number of range data units, said third window means being coupled to said transition test cell means;

means coupled to said first and third window means for generating at least two difference window functions, each of said functions being centered about said transition test cell means and having a predetermined length;



means for multiplying said at least two difference window functions together;

transition dectection means coupled to said means for multiplying;

alarm threshold calculation means coupled to said first and second window means for calculating an alarm threshold, said calculation means being responsive to said transition detection means to remove certain of said range data units in said first and second window means from said calculation; and

comparator means for comparing said range data unit stored in cell under test means with said alarm threshold.

4,542,382

SEARCH RADAR APPARATUS

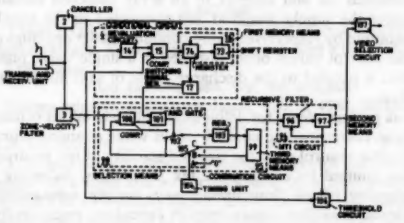
Willem A. Hol, Hengelo, Netherlands, assignor to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

Filed Jun. 25, 1982, Ser. No. 392,115

Claims priority, application Netherlands, Jul. 2, 1981, 8103178

Int. Cl.⁴ G01S *13/54*

U.S. Cl. 343—7.7 **16 Claims**



1. Search radar apparatus including an MTI video processing unit having a canceller for generating video signals of moving targets, a zero-velocity filter for generating clutter video signals, and clutter level indication means for determining a standard clutter level per range-azimuth clutter cell of the radar range with the application of clutter video signals, the improvement therein comprising a conditional circuit connected to the canceller and the zero-velocity filter for generating per range quant of each radar scan a clutter switching signal when for the range quant the signal value obtained with the zero-velocity filter is greater than the signal value obtained with the canceller, and further comprising a combination circuit connected to the zero-velocity filter and the conditional circuit for selecting the clutter video signals present with the clutter switching signals and for determining from said selected clutter video signals a temporary clutter level in each clutter cell and in each antenna revolution period for application to the clutter level indication means to produce a standard clutter level.

4,542,383

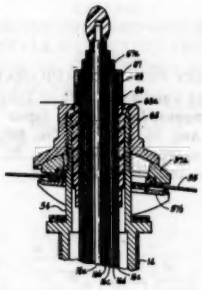
REPLACEABLE MOTOR OPERATED ANTENNA

Dar L. Cusey, and John M. Kinard, both of Montgomery, Ala., assignors to National Industries, Inc., Montgomery, Ala.

Filed May 23, 1983, Ser. No. 496,897

Int. Cl.⁴ H01Q *1/10*

U.S. Cl. 343—903 **10 Claims**



1. Antenna structure adapted for mounting to a vehicle mounting surface comprising an outer fixed antenna tube having an end adapted to extend through an opening in said mounting surface, a number of telescoping antenna sections collapsible within the outer tube which together form an antenna unit slidably removable from the outer tube, a reversible electric motor located adjacent the tube having an output shaft, a transmission coupled between said output shaft and the antenna sections to extend and retract sections through the opening relative to said outer tube, a housing for said motor and transmission, a mounting member coupled to the housing and adapted to be secured to the vehicle mounting surface, a first tubular insulator abutting said mounting member and surrounding said antenna tube between the tube and mounting member and a retaining collar couplable to said tube and insulator for limiting the extent of movement of said antenna sections relative to said tube, said collar being removable to allow said antenna unit to be withdrawn from said tube and replaced.

4,542,384

ELECTRONIC EQUIPMENT WITH A PRINTER

Shigemitsu Tazaki, Matsudo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 18, 1983, Ser. No. 553,125

Claims priority, application Japan, Dec. 1, 1982, 57-210904

Int. Cl.⁴ G01D *9/00, 15/18*

U.S. Cl. 346—33 R **5 Claims**

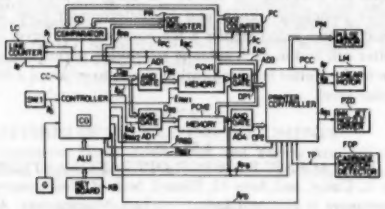
1. Electronic equipment having a printer, comprising:

numeric keys for providing graph data;

key means for manually selecting one of a first print mode in which the graph data is printed at a first print density and a second print mode in which the graph data is printed at

a second print density higher than the first print density; and

print means including a dot print element for reciprocating along a line relative to a recording medium to print dots thereon, wherein said dot print element prints when moving in one direction when the first print mode is selected and prints when moving in both directions when the second mode is selected, so as approximately to double the number of dots used to print the graph data in the second print mode.

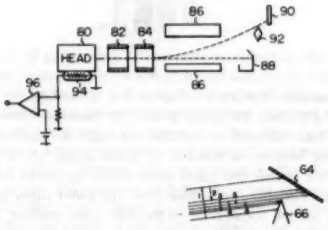


4,542,385

INK JET PRINTING APPARATUS

Koichiro Jinnai, and Yutaka Ebi, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 16, 1982, Ser. No. 408,561
Claims priority, application Japan, Aug. 20, 1981, 56-130782
Int. Cl.[4] G01D *15/18*
U.S. Cl. 346—75 **5 Claims**



1. An ink jet printing apparatus comprising: an ink ejection head for ejecting a jet of ink;

charging means for electrostatically and selectively charging ink droplets separated from the ink jet;

deflection means for electrostatically deflecting the charged ink droplets;

deflection detecting means for detecting an amount of deflection of the ink droplets;

ink conditioning detecting means for detecting a condition of the ink; and

control means for controlling at least one of the charging means and the deflection means to compensate for a distortion in print position in accordance with a condition of the ink detected by said ink condition detecting means;

the ink condition detecting means comprising a temperature sensor for sensing a temperature of the ink adjacent to the ink ejection head;

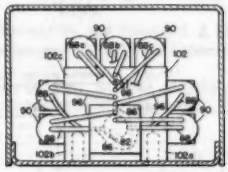
the control means comprising a storage for storing at least two ink temperature compensation tables, one being read out for compensating for a distortion in print position caused by the deflected ink droplets at normal operating temperatures above a predetermined reference temperature, and the other being read out for compensating for a distortion in print position caused by the deflected ink droplets at temperatures below the reference temperature occurring during an initial operating period after startup of the apparatus.

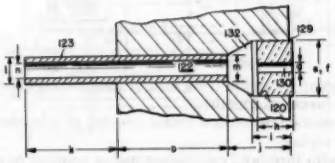
4,542,386

INK JET PRINTING SYSTEM

Patrick Delligatti, and Hans F. Steen, both of Tom's River, N.J., assignors to Dalemark Industries, Inc., Lakewood, N.J.

Filed Nov. 15, 1982, Ser. No. 441,761
Int. Cl.[4] G01D *15/18*
U.S. Cl. 346—140 R **6 Claims**





1. An ink jet discharge head for use in an ink jet printing system that projects mark-forming ink droplets onto a printing surface, comprising:

(a) a printing head enclosure;

(b) a nozzle body mounted to said head enclosure and containing a plurality of ink jet orifices in a single vertical linear pattern defining a discharge plane;

(c) a support arranged in said head enclosure generally parallel to and spaced from said linear pattern of ink jet orifices;

(d) a supply manifold at said support and containing an internal longitudinal cavity extending, from said support, a substantial portion of the distance between the discharge plane of the ink jet orifices and said support;

(e) a plurality of signal responsive solenoid-operated control valves corresponding in number to the number of ink jet orfices; said solenoid-operated control valves being mounted on said support in an array disposed radially about the supply manifold and connected to the supply manifold by respective supply conduits, outlet openings of the control valves being disposed in a single valve plane that is parallel to the discharge plane of said ink jet orifices;

(f) ink passage means for delivering ink to said ink jet orifices from corresponding control valves while attaining reproducible control over the size and stability of ink jet droplets emitted by each of the ink jet orifices, including a plurality of ink flow passageways having substantially identical ink flow characteristics extending, respectively, between the outlet openings of the control valves and inlet opening of nozzle channels that are provided in the nozzle body, and end of said nozzle channels opposite their inlet opening communicating with nozzle cavities formed within the nozzle body, and plugs, containing a respective said ink jet orifice extending therethrough, press fit into each of said nozzle cavities in a manner forming a reservoir adjacent each ink jet orifice, between an inner end of each plug and the end of the nozzle channel communicat-

ing with the nozzle cavity, the volume of each reservoir being substantially greater than the volume of the adjacent nozzle orifice, wherein the ink jet orifices have a diameter of approximately 0.008 inch and a length of approximately 3/32 inch and wherein the reservoirs have a minimum diameter of approximately 0.068 inch adjacent the nozzle channels, a maximum diameter of approximately approximately 0.09 inch adjacent the plugs and a length of approximately 0.0625 inch.

4,542,387

THERMAL TRANSFER TYPE PRINTING APPARATUS

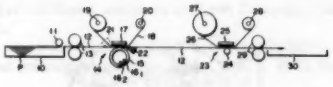
Masayoshi Nagashima, Chigasaki; Hiroshi Yamane, Ebina; Makoto Nonoyama, Yokohama, and Tsuneo Tashiro, Sagamihara, all of Japan, assignors to Toshiba Corporation, Kawasaki, Japan

Filed Feb. 16, 1983, Ser. No. 467,165

Claims priority, application Japan, Feb. 17, 1982, 57-24121; Feb. 17, 1982, 57-24123

Int. Cl.[4] G01D *15/10;* **B41J** *3/20*

U.S. Cl. 346—76 PH **5 Claims**



1. A thermal transfer type printing apparatus comprising:

means for transporting a paper sheet along a transport path;

a mono-color printing section disposed on said transport path and including a plurality of first heating elements selectively energized according to a first color image signal in a state urging a monochromatic ink ribbon having a one color ink layer against said paper sheet, the ink layer of said ink ribbon being thereby transferred onto said paper sheet according ro selective energization of said first heating elements; and

a multi-color printing section disposed on said transport path after said mono-color printing section and including a plurality of second heating elements selectively energized according ro each of a plurality of second image signals for respective different colors in a state contacting a portion of multi-color ink ribbon having color ink layers of said different colors which are arranged in a predetermined order, on said paper sheet passed through said mono-color printing section, the color ink layers of said multi-color ink ribbon being successively transferred in a overlap state onto said paper sheet according to selective energization of said second heating elements.

4,542,388

LIGHT OR HEAT OUTPUT STABILIZING SYSTEM

Shigeo Harada, Kaisei, Japan, assignor to Fuji Photo Film Co., Ltd., Japan

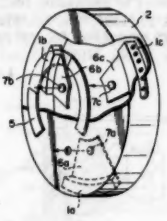
Filed Jan. 31, 1984, Ser. No. 575,698

Claims priority, application Japan, Feb. 1, 1983, 58-15136

Int. Cl.[4] G01D *15/14*

U.S. Cl. 346—76 L **5 Claims**

1. A light or heat output stabilizing system for stabilizing the output of a light source for exposure or a heat source for exposure in a recording apparatus for recording an image in a light-sensitive material or a heat-sensitive material by scanning the light-sensitive material with a light beam or by scanning the heat-sensitive material with a heat beam through the rotation of a rotating body provided with at least one light source for exposure or at least one heat source for exposure, wherein the improvement comprises the provision of a means for detecting the non-recording period for which recording in said light-sensitive material by the light beam emitted from said light source for exposure or recording in said heat-sensitive material by the heat beam emitted from said heat source for exposure is not conducted, and a stabilizing circuit for stabilizing the output of said light source for exposure or said heat source for exposure within said non-recording period detected by said detecting means.



4,542,389

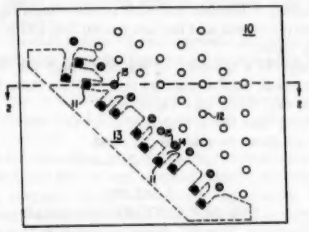
SELF CLEANING INK JET DROP GENERATOR HAVING CROSSTALK REDUCTION FEATURES

Ross R. Allen, Ramona, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 24, 1985, Ser. No. 444,108

Int. Cl.[4] G01D *15/18*

U.S. Cl. 346—140 R **4 Claims**



1. A drop generator comprising:

a hollow container having a nozzle plate and a back plate, said container enclosing a plenum in which is contained a liquid that is in contact with the nozzle plate and the back plate;

said nozzle plate having at least two nozzles;

each of said nozzles having associated with it a means for ejecting droplets of liquid through its associated nozzle;

a barrier located in the plenum, said barrier extending substantially from the nozzle plate to the back plate and having at least one refill channel that opens into the plenum at a mouth;

each refill channel having associated with it a nozzle and means for ejecting droplets of liquid through that nozzle;

each refill channel having located within it the volume of liquid located directly between its associated nozzle and its associated means for ejecting droplets; and

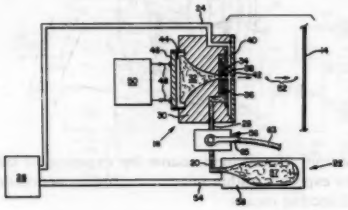
in each portion of the nozzle plate adjacent to the mouth of each refill channel, an isolator hole in which the ink forms a meniscus, whereby the meniscus in an isolator hole will oscillate in response to disturbances in the ink associated with ejection of droplets through the nozzle associated with that channel, thereby dissipating some of the energy of such disturbance before such disturbances can be transmitted to another nozzle.

4,542,390

INK JET PRINTER PURGING DEVICE AND PROCESS

John W. Bruning, Mulino, and Stephen C. Fuller, Wilsonville, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Jul. 29, 1983, Ser. No. 518,591
Int. Cl.[4] G01D *15/16, 15/18*
U.S. Cl. 346—140 R 2 Claims



1. A method for replacing a head unit on an ink jet printer to insure that no impurities and bubbles are introduced into the system, said head unit including an ink jet head and a three way valve, comprising the steps of:

pinching off an ink line prior to removing an old head unit, said ink line being connected at one end to a first outlet of said three way valve and at the other end to an ink source, a second outlet of said three way valve being connected to said ink jet head;

mounting a new head unit in place of said old head unit, said three way valve on said new head unit being positioned to close off said second outlet;

connecting a disposal line with an associated receptacle to a third outlet and said ink line to said first outlet of said three way valve;

bleeding off a quantity of ink from said ink line into said receptacle until impurities and bubbles have been purged from said three way valve; and

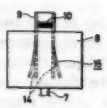
switching said three way valve so that ink from said ink source flows to said ink jet head.

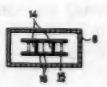
4,542,391

INK JET RECORDING HEAD

Akira Miyagawa, Tanashi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 28, 1983, Ser. No. 546,413
Claims priority, application Japan, Nov. 9, 1982, 57-197239
Int. Cl.[4] G01D *15/18;* F16K *17/38;* G05D *27/00*
U.S. Cl. 346—140 R 8 Claims





1. An ink jet recording head, comprising:

liquid droplet discharging means for discharging ink liquid droplets upon application of electrical signals;

an ink feeding path for supplying ink to said liquid droplet discharging means; and

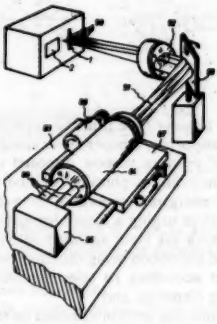
a flow path resistance adjusting section including a tubular member having a free end provided within a part of said ink feeding path located at or proximate to said liquid droplet discharging means for increasing the flow resistance in said part of said ink feeding path due to a rise in the ink temperature and decreasing the flow resistance in said part of said ink feeding path due to a decrease in the ink temperature by varying the cross-sectional area of said free end of said tubular member with temperature changes.

4,542,392

METHOD AND APPARATUS FOR SETTING AND MONITORING AN EXPOSURE SPOT FOR PRINTING

Jörg Schulz-Hennig, Heikendorf, Fed. Rep. of Germany, assignor to Dr. Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

Filed Oct. 19, 1983, Ser. No. 543,519
Claims priority, application European Pat. Off., Nov. 6, 1982, 82110242.3
Int. Cl.[4] G01D *15/14*
U.S. Cl. 346—160 13 Claims



11. Apparatus for controlling an exposure spot for exposing light sensitive material comprising, means for generating a plurality of scanning beams, means for controlling said scanning beams, a holder for said light sensitive material and formed with a slot through which said plurality of scanning beams can enter, means for scanning said scanning beams on said slot, first light detecting means receiving the portion of the plurality of beams which enter said slot, electrical processing means receiving the output of said first light detecting means and producing a control signal which is supplied to said means for controlling said scanning beams and wherein said control signal is indicative of focus and said means for controlling is a focus control.

4,542,393

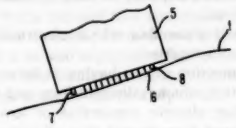
PRINT HEAD FOR AN ELECTROEROSION PRINTER

Fritz Hilpert, Boeblingen; Erich Kohm, Schoenaich; Volker Rudolph, Aidlingen, and Manfred Wohnsdorf, Boeblingen, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 20, 1983, Ser. No. 496,759
Claims priority, application European Pat. Off., Jun. 4, 1982, 82104904.6
Int. Cl.[4] G01D *15/08*
U.S. Cl. 346—163 11 Claims

11. An apparatus for printing on a record carrier comprising: a print head including means for moving the print head in a

direction toward unprinted portions on the record carrier; and



a sensor electrode mounted on the print head at an angle with respect to the print electrodes, angled in the direction of the unprinted record carrier.

4,542,394

DIAZO-TYPE THERMOSENSITIVE RECORDING MATERIAL

Yoshihiro Suguro, Mishima, and Masanaka Nagamoto, Shizuoka, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 30, 1984, Ser. No. 595,023
Claims priority, application Japan, Apr. 6, 1983, 58-60501
Int. Cl.⁴ B41M *5/18*
U.S. Cl. 346—209 **6 Claims**

1. A diazo-type thermosensitive recording material comprising a support material, and at least two layers formed thereon, one of said layers being a diazonium compound layer comprising at least a diazonium compound, and another of said layers being a coupler layer comprising at least a coupler capable of reacting with said diazonium compound to form a dye, and a benzimidazole derivative having a substituent at the 1-position thereof.

4,542,395

HEAT-SENSITIVE RECORDING MATERIAL

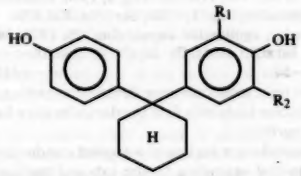
Toranosuke Saito, Osaka; Masakatu Kitani, Hyogo; Takashi Ishibashi, Osaka; Naoto Arai, Hyogo; Takeshi Murakami, Hyogo, and Toshitake Suzuki, Hyogo, all of Japan, assignors to Sanko Kaihatsu Kagaku Kenkyusho, Osaka and Kanzai Paper Manufacturing Company Ltd., Tokyo, both of, Japan

Division of Ser. No. 592,598, Mar. 23, 1984,. This application Nov. 5, 1984, Ser. No. 668,462
Claims priority, application Japan, Mar. 25, 1983, 58-48939
Int. Cl.⁴ B41M *5/18*
U.S. Cl. 346—216 **1 Claim**

1. In the heat-sensitive recording materials having

a heat-sensitive recording layer composed mainly of a colorless or light-colored color-forming substance and a color developer by which said color-forming substance forms colors,

a heat-sensitive recording material containing as said color developer, at least one kind of phenolic compounds expressed by the general formula I



I

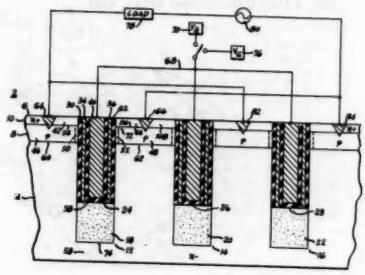
wherein R_1 represents an alkyl group or a cycloalkyl group and R_2 represents hydrogen atom or an alkyl group.

4,542,396

TRAPPED CHARGE BIDIRECTIONAL POWER FET

Herman P. Schutten, Milwaukee; James A. Benjamin, Waukesha, both of Wis., and Robert W. Lade, Fort Myers, Fla., assignors to Eaton Corporation, Cleveland, Ohio

Filed Sep. 23, 1982, Ser. No. 421,930
Int. Cl.⁴ H01L *29/78, 29/747*
U.S. Cl. 357—23.4 **20 Claims**



1. A bidirectional power FET, comprising:

a first source region of one conductivity type semiconductor material;

a first channel region of opposite conductivity type semiconductor material forming a junction with said first source region;

a single drift region of said one conductivity type semiconductor material forming another junction with said first channel region;

a second channel region of said opposite conductivity type semiconductor material forming a junction with said drift region;

a second source region of said one conductivity type semiconductor material forming a junction with said second channel region;

gating means including gate electrode means disposed proximate said first and second channel regions and adapted for storing trapped charge for producing electric fields of sufficient intensity to invert the conductivity type in said first and second channel regions;

whereby upon application of voltage of either polarity to said first and second source regions, electric current can flow in a respective corresponding direction between them, under control of said gating means;

said single drift region supporting OFF state blocking voltage in both directions.

4,542,397

SELF ALIGNING SMALL SCALE INTEGRATED CIRCUIT SEMICONDUCTOR CHIPS TO FORM LARGE AREA ARRAYS

David K. Biegelsen, Portola Valley, and Dirk J. Bartelink, Los Altos, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 12, 1984, Ser. No. 599,427
Int. Cl.⁴ H01L *25/04, 21/302, 21/98*
U.S. Cl. 357—32 **12 Claims**

1. A method for self aligning small scale integrated circuit chips to form large area arrays comprising the steps of

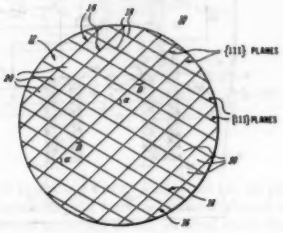
(a) providing a <110> axial wafer,

(b) forming a plurality of small scale integrated circuits on a major surface of said wafer within predetermined latent boundaries on said wafer, said boundaries being aligned with the {111} vertical planes of the wafer whereby each formed circuit is defined within parallelogrammatic like geometries defined by said planes at said predetermined latent boundaries and their plane intersections,

(c) selective anisotropically etching along said predetermined boundaries to form a plurality of independent small scale integrated chips comprising said parallelogrammatic like geometries,

(d) initially forming said chips into a two dimensional array by placing said chips on a planar support surface in their nearly correct alignment,

(e) laterally compacting said chips together in abutting relationship causing said chips to self align and self interlock into a two dimensional array, and



(f) maintaining the compacted chips in aligned relation while bounding them to a planar support slab.

11. A large area array formed from a plurality of small scale integrated chips in self aligned and self interlocking abutment in accordance with the method of claim 1 wherein the spacing between adjacent chip edges of said array chips is less than 7 μm, said array chips fabricated from a <110> axial wafer wherein the chip boundaries are aligned with {111} vertical planes of said wafer so that each of said array chips may be defined within parallelogrammatic like geometries defined by said planes and their plane intersections.

4,542,398

SEMICONDUCTOR DEVICES OF MULTI-EMITTER TYPE

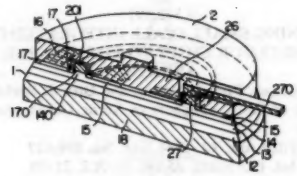
Tsutomu Yutsuo, Hitachi; Masayoshi Naito, Katsuta; Takahiro Nagano, Hitachi; Tomio Yasuda, Hitachi; Jin Onuki, Hitachi; Mitsuo Yanagi, Hitachi, and Fumio Sato, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 295,249, Aug. 24, 1981, abandoned. This application Jun. 18, 1984, Ser. No. 621,370

Claims priority, application Japan, Sep. 1, 1980, 55-119810

Int. Cl.⁴ H01L *29/74*

U.S. Cl. 357—38 **15 Claims**



1. A semiconductor device comprising:

a semiconductor substrate having a pair of opposite major surfaces which substrate comprises between said major surfaces a plurality of first semiconductor regions of one conductivity type exposed to one major surface of the substrate, and a second semiconductor region of another conductivity type opposite to said one conductivity type adjacent to said first semiconductor regions and exposed to said one major surface so that said first semiconductor regions are individually separated and surrounded by said second semiconductor region in said one major surface,

a plurality of first electrodes disposed directly on said first semiconductor regions respectively,

a second electrode disposed directly on said second semiconductor region,

a first conductive member which electrically connects said first electrodes together,

electrical connection means having at least one closed loop shaped portion which is discrete from said second electrode for providing electric connection of low resistance to a selected closed loop shaped area of said second electrode which area corresponds to the closed loop shape of said electrical connection means,

said first semiconductor regions being arranged along and on the inner and outer sides of said closed loop shaped portion of said electrical connection means, and

a second conductive member connected electrically to said electrical connection means.

4,542,399

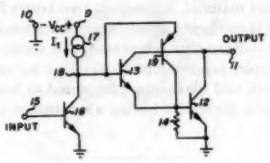
FEED FORWARD DARLINGTON CIRCUIT

Dennis M. Monticelli, Fremont, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Feb. 22, 1983, Ser. No. 468,243

Int. Cl.⁴ H01L *27/02;* **H03K** *3/26*

U.S. Cl. 357—46 **9 Claims**



1. A Darlington transistor circuit stage having a pair of like conductivity bipolar transistors coupled together as output and driver devices with their collectors commonly connected, means coupling the emitter of said driver transistor to the base of said output transistor and means coupling the base of said driver transistor to an input terminal, said circuit comprising:

a transistor, of complementary construction to that of said driver transistor, having a base coupled to said commonly connected collectors, a collector coupled to said emitter of said driver transistor and an emitter coupled to said base of said driver transistor.

4,542,400

SEMICONDUCTOR DEVICE WITH MULTI-LAYERED STRUCTURE

Shunichi Hiraki, Yokohama; Kuniaki Kumamaru, Chigasaki; Yutaka Koshino, and Toshio Yonezawa, both of Yokosuka, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 176,290, Aug. 8, 1980, abandoned. This application Sep. 1, 1983, Ser. No. 528,473

Claims priority, application Japan, Aug. 15, 1979, 54-103695

Int. Cl.⁴ H01L *29/34, 29/40, 23/30*

U.S. Cl. 357—54 **12 Claims**

1. A planer type semiconductor device comprising:

a semiconductor body of a first conductivity type having an exposed surface;

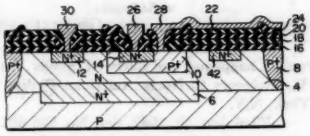
a first semiconductor region of a second conductivity type formed in and extending to the exposed surface of said semiconductor body to form an exposed surface and to form an exposed P-N junction;

a second semiconductor region of the first conductivity type

formed in and extending to the exposed surface of said first semiconductor region;

a SiO_2 film formed on the exposed surfaces of said semiconductor body and first semiconductor region, with said SiO_2 film covering said exposed P-N junction formed between said semiconductor body and said first semiconductor region;

a first insulation structure formed on the area of said SiO_2 film which is on said exposed surface of said semiconductor body, the first insulation structure having a first polarity of charge opposite the polarity of said first conductivity type;



a second insulation structure formed on the area of said SiO_2 film which is on the exposed surface of said first semiconductor region, the second insulation structure having a second polarity of charge opposite the polarity of said second conductivity type;

a first electrode formed on said second semiconductor region; and

a second electrode formed on said first semiconductor region and extending over said first and second insulation structures.

4,542,401

SEMICONDUCTOR DEVICE WITH SPRAYED METAL LAYER

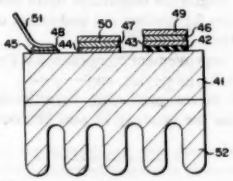
Toshinobu Sekiba, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 190,944, Sep. 26, 1982, abandoned. This application Dec. 22, 1983, Ser. No. 563,884

Claims priority, application Japan, Apr. 3, 1979, 54-39934

Int. Cl.[3] H01L *21/58, 23/14*

U.S. Cl. 357—71 **3 Claims**



1. A semiconductor device with a semiconductor element soldered to a metal substrate, comprising:

a sprayed insulating layer which is directly attached to a predetermined part of the surface of said metal substrate and which consists of ceramics or plastics, the thickness of the sprayed insulating layer being from 0.05 to 0.4 mm;

a sprayed metal layer which is directly attached to said sprayed insulating layer and which consists of one metal selected from the group consisting of copper, nickel, tin and silver; and

a solder layer directly attached to said sprayed metal layer for securely attaching said semiconductor element.

4,542,402

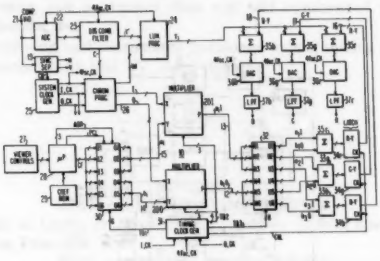
DIGITAL COLOR MATRIX FOR A DIGITAL TELEVISION RECEIVER

Joseph R. Ader, Yardley, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Jun. 7, 1983, Ser. No. 502,002

Int. Cl.[4] H04N *9/539*

U.S. Cl. 358—30 **8 Claims**



1. A digital color matrix for a digital television receiver, comprising:

means for generating samples of binary coded color mixture digital signals that are a representation of color picture information;

means for generating values of binary coded coefficients that convert the representation of said color picture information from color mixture signals into binary coded color difference signals;

means for storing said binary coded coefficients;

a multiplier arrangement receiving samples of said binary coded color mixture digital signals as first inputs for multiplying samples thereof by corresponding binary coded coefficients that are supplied by said storing means as second inputs, wherein the multiplication process is capable of being performed in a pipeline operation such that a next subsequent multiplication is started before a given multiplication is completed;

means for sequentially clocking out of said storing means selected ones of said binary coded coefficients at short enough intervals to permit pipelining of the multiplication process for developing a plurality of products corresponding to the color mixture components of said binary coded color difference signals; and

means responsive to said plurality of products for combining the products to form samples of said binary coded color difference signals.

4,542,403

METHOD OF CONFINING THE SIGNAL LEVEL RANGE OF A TELEVISION CAMERA

Friedrich Zimmermann, An der Fuchsenhütte 31, 6101 Rossdorf; Herbert Zettl, Wolfskehlstr. 28, 6081 Erfelden; Hans W. Zappen, Reidstrasse 18, 6140 Bensheim, and Christian Sacher, In den Rödern 4, 6100 Darmstadt, all of Fed. Rep. of Germany

Filed Apr. 4, 1983, Ser. No. 481,862

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1982, 3212616

Int. Cl.[4] H04N *9/535*

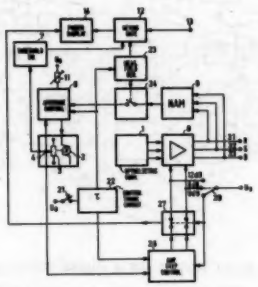
U.S. Cl. 358—41 **5 Claims**

1. Method of signal level setting of a color television camera having an electronic finder, in accordance with scene brightness, by use of a camera equipped with an opto-electronic converter for delivering a video signal, an automatic camera aperture control, a video amplifier of switchable degree of amplification and amplifier control switching means, comprising the steps of:

measuring, in a selected measurement portion of the picture field, the video signal derived from the scene by the opto-electronic converter of the camera;

comparing the measured video signal with a reference value and operating the camera aperture control so as to bring the measured video signal towards said reference value;

comparing the camera aperture setting produced by the camera aperture control with predetermined upper and lower pre-limit values, selected to be somewhat inside the available extreme values of aperture, and operating said



amplifier control switching means in response to overstepping of said upper pre-limit or understepping said lower pre-limit value so as to make a corrective change step, in the degree of amplification of said derived video signal;

repeating the above steps if and to the extent necessary to bring the camera aperture setting within the range limited by said pre-limit values, and

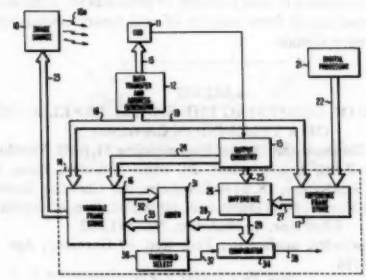
indicating in the camera finder the nominal amount of amplification, if any, provided in the video channel by said amplifier.

4,542,404

CHARGE COUPLED DEVICE BASED SYSTEM AND METHOD FOR INSPECTING AND MODIFYING IMAGES

Robert A. Duschl, Lancaster, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Jun. 14, 1982, Ser. No. 388,037
Int. Cl.[4] H04N *7/18*
U.S. Cl. 358—106 **15 Claims**



1. A system for inspecting an image projected onto a CCD from an image source wherein said CCD stores pixel data from said image on a plurality of pixels comprising:

output circuitry and a data transfer and address generator for transferring frames of said pixel data from each of said CCD pixels to said output circuitry whereby said data from each of said pixels has a unique address;

means of storing a reference frame representative of a reference image, said reference frame having an optimum reference pixel signal for each of said CCD pixels;

variable frame store means for initially storing said CCD pixel data, and wherein said CCD pixel data are sequentially replaced by modified pixel signals for each pixel of said CCD; and

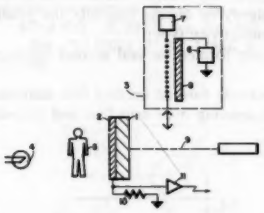
means for receiving and for comparing said pixel data and said reference pixel signals, and providing said modified pixel signals to said variable frame store means whereby a frame of modified pixel data exists in said variable frame store means.

4,542,405

METHOD AND APPARATUS FOR DISPLAYING AND READING OUT AN IMAGE

Emil Arnold, Chappaqua, and Barry M. Singer, New York, both of N.Y., assignors to North American Philips Corporation, New York, N.Y.

Filed Jun. 20, 1983, Ser. No. 505,602
Int. Cl.[4] H04N *7/18, 3/02*
U.S. Cl. 358—111 **16 Claims**



1. In an improved apparatus for displaying and reading out an image comprising a film of photoconductor material, first means for depositing electrical charge over said film to establish a voltage across said film, an object adjacent said film, a radiation source directing radiation through said object to said film, said photoconductive film producing local voltages over a surface of said film in response to absorption of said radiation passing through said object, wherein changes of said local voltages at said surface of said film constitute a latent radiation image, second means for scanning light over said surface to create a photocurrent dependent on said latent radiation image, third means for measuring said photocurrent, said photocurrent having a magnitude dependent upon said local voltages, and fourth means for reading out said image corresponding to said photocurrent,

wherein the improvement comprises said first means being a corona discharge device, and

said second means producing light having wavelengths shorter than the bandgap of said photoconductive material.

4,542,406

VIDEO/AUDIO SIMULTANEOUS TRANSMISSION SYSTEM

Haruo Shimoyama; Toshio Ohshima; Shinobu Nomoto; Makoto Hiraoka, all of Tokyo, and Toshio Hanabata, Yokohama, all of Japan, assignors to Nippon Electric Co., Ltd.; Nippon Telegraph & Telephone Public Corporation, both of Tokyo and Fujitsu Limited, Kawasaki, all of, Japan

Filed Dec. 7, 1982, Ser. No. 447,653
Claims priority, application Japan, Dec. 10, 1981, 56-199099
Int. Cl.[4] H04N *7/04*
U.S. Cl. 358—141 **3 Claims**

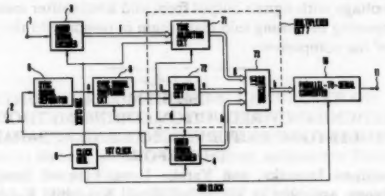
1. A video/audio simultaneous transmission system comprising:

means for sampling and encoding a video signal inclusive of

horizontal sync signals occurring at indefinite time intervals in response to a first clock signal having a recurrence period independent of the recurrence period of the horizontal sync signal;

means for sampling and encoding an audio signal in response to a second clock signal having a predetermined recurrence period;

means for generating a sync signal in response to the horizontal sync signal;



means for modifying the sync signal to produce a modified sync signal on the basis of said first clock signal; and

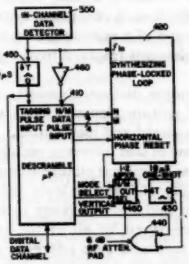
means responsive to a third clock signal each time it receives the modified sync signal, for transmitting a special code different from the codes of the encoded audio and video signal data and thereafter the encoded audio and video signals successively.

4,542,407

METHOD AND APPARATUS FOR SCRAMBLING AND DESCRAMBLING TELEVISION PROGRAMS

Jeffrey L. Cooper, and Brian C. Johnson, both of Syracuse, N.Y., assignors to North American Philips Corporation, New York, N.Y.

Filed Jun. 10, 1983, Ser. No. 503,208
Int. Cl.[4] H04N 7/16
U.S. Cl. 358—120 **20 Claims**



1. A method for scrambling and descrambling television programs, in which selected television programs, in the form of composite TV video signals having a stream of horizontal synchronizing pulses therein, are scrambled at the transmission end and then descrambled, when authorized, at the receiving end; the method comprising the steps:

suppressing the horizontal synchronizing pulse stream contained in the selected TV video signal;

encoding said horizontal synchronizing pulse stream by multiplying the pulse frequency of said pulse stream by a quantity N/M, where N and M are integers, thereby generating a new synthesized pulse stream;

encoding said synthesized pulse stream with in-channel data relating to the phase of the horizontal and vertical synchronizing pulses as well as data concerning the values for N and M;

combining said encoded synthesized pulse stream with said TV video signal in which the horizontal synchronizing pulses have been suppressed;

transmitting the resultant TV video signal; and then

receiving said resultant TV signal;

separating said encoded synthesized pulse stream from said resultant TV video signal;

decoding said encoded synthesized pulse stream to recover said in-channel data;

regenerating said horizontal synchronizing pulse stream using said in-channel data and said synthesized pulse stream; and

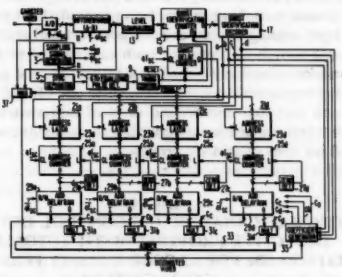
combining said regenerated horizontal synchronizing pulse stream with said TV video signal.

4,542,408

DIGITAL DEGHOSTING SYSTEM

Henry G. Lewis, Jr., Trenton, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Aug. 31, 1983, Ser. No. 528,262
Int. Cl.[4] H04N 5/21
U.S. Cl. 358—167 **10 Claims**



1. In a digital video processing system including analog-to-digital converter, means responsive to an analog video signal having a desired main component and undesired ghost components and a sampling signal for producing digital samples of said analog video signal, a deghosting apparatus, comprising:

ghost identification means for identifying a predetermined number of said ghost components;

ghost delay detection means for counting cycles of said sampling signal to generate counts representing the delay between said ghost components and said main component of said video signal;

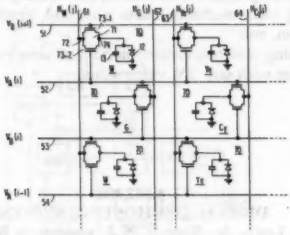
a plurality of channels each responsive to said digital samples for generating digital samples of a psuedo ghost component of a respective one of said ghost components; each of said channels including digital delay means coupled to said ghost delay detection means and said ghost identification means for delaying said digital samples of said video signal by incremental delays equal of the number of cycles of said sampling signal counted by said ghost delay detection means when the respective one of said ghosts is identified by said ghost identification means to produce delayed digital samples; and a digital multiplier for multiplying said delayed samples by a coefficient to generate said digital samples of said respective one psuedo ghost signals; and

digital summing means for additively combining said digital samples of said video signal with said digital samples of said psuedo ghost signals to produce digital samples of a deghosted version of said video signal.

4,542,409
SINGLE GATE LINE INTERLACE SOLID-STATE COLOR IMAGER

Shigeharu Ochi, San Jose, Calif., assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 25, 1983, Ser. No. 478,975
Int. Cl.⁴ H04N *9/07*
U.S. Cl. 358—212 **14 Claims**

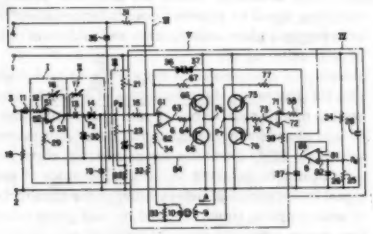


1. A solid-state imager comprising
a grid of electrodes;
a plurality of light sensing means arranged at interstices in said grid of electrodes; and
a plurality of switching means, a pair of first and second ones of said switching means being provided for each of said light sensing means, each of said first and second ones of said switching means of each said pair of said switching means selectively coupling a respective one of said light sensing means to a respective first one of said electrodes, and said first and second ones of said switching means having control inputs coupled to respective second and third ones of said electrodes.

4,542,410
AUTOMATIC DIAPHRAGM CONTROL DEVICE OF OBJECTIVE PROVIDED WITH AUTOMATIC DIAPHRAGM FOR CLOSED CIRCUIT TELEVISION (CCTV) CAMERA

Masayuki Arai; Terumi Ogasawara, and Tohru Shikano, all of Tokyo, Japan, assignors to Asahi Seimitsu Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 16, 1983, Ser. No. 504,860
Claims priority, application Japan, Dec. 14, 1982, 57-218945
Int. Cl.⁴ H04N *5/26*
U.S. Cl. 358—228 **4 Claims**

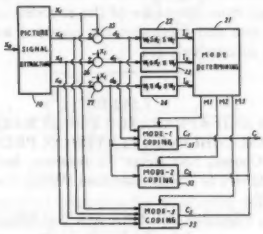


1. An automatic control circuit for opening and closing the diaphragm of the objective lens for a video camera comprising:
power source means for providing a bias voltage to said control circuit;
inverting amplifier means for receiving video signals output from said video camera and amplifying and inverting said signals;
voltage doubler means including capacitor means for doubling and rectifying the signals output from said inverting amplifier means;
means for adjusting the sensitivity of said control circuit;
level shifter means for lowering the level of the doubled and rectified signals output from said doubler means by a predetermined voltage;
intermediate voltage supply circuit means for supplying said control circuit with a voltage which is intermediate with respect to said bias voltage; and
diaphragm control means for comparing said intermediate voltage with signals output from said level shifter means and opening or closing said diaphragm in response to the results of the comparison.

4,542,411
REDUNDANCY REDUCTION CODING METHOD OF MULTI-TONE PICTURE SIGNAL AND APPARATUS THEREFOR

Yoshifumi Imanaka, and Yutaka Ueno, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 31, 1983, Ser. No. 462,205
Claims priority, application Japan, Feb. 26, 1982, 57-31984
Int. Cl.⁴ H04N *1/00, 7/12*
U.S. Cl. 358—260 **6 Claims**



1. A redundancy reduction coding method of multi-tone picture signals, in which each of a plurality of multi-tone picture signals is indicative of a corresponding tone of each of a plurality of picture elements resolved from a picture, comprising the steps of
selecting, as reference picture elements, a predetermined combination of picture elements from said picture elements already scanned and transmitted,
a predetermined one of said reference picture elements being handled as a base reference picture element,
evaluating a plurality of first tone level differences between the tone level of said base reference picture element and each of the tone levels of all of the reference picture elements other than said base reference picture element, said first tone level differences representing a plurality of picture states;
evaluating a second tone level difference between a tone level of an objective picture element to be transmitted and the tone level of said base reference picture element,
responding to said plurality of first tone level differences and said second tone level difference to determine that a particular mode is mode-1 if the first level differences and second tone level differences are all included in a predetermined region and that a particular mode is a mode other than mode 1 if the first tone level differences and/or the second tone level difference are not included in the region,
responding to said determination of the mode 1 to: (1) predict an order in which said second tone level difference appears for each of the plurality of picture states represented by the combination of said plurality of first tone level differences, (2) convert said second tone level differ-

ence into said predicted order, and (3) convert said predicted order into a predetermined assigned code, and responding to the determination of the mode other than said mode 1 to code the tone level of said objective picture element by means of a predetermined coding method appropriate for a mode other than mode-1.

4,542,412
METHOD FOR COMPRESSING CHARACTER OR PICTORIAL IMAGE DATA

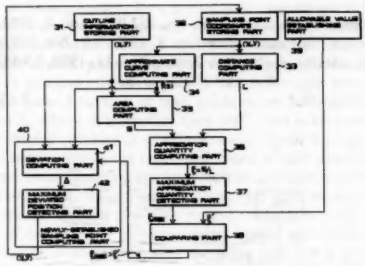
Shigeru Fuse; Masatake Takashima; Shinichiro Fukuda, and Hiroyuki Shibata, all of Toshima, Japan, assignors to Shaken Co., Ltd., Tokyo, Japan

Filed Feb. 1, 1983, Ser. No. 463,111

Claims priority, application Japan, Feb. 4, 1982, 57-16884; Feb. 4, 1982, 57-16885; Feb. 4, 1982, 57-16886; Feb. 4, 1982, 57-16887

Int. Cl.⁴ H04M *7/12*

U.S. Cl. 358—260 **9 Claims**



1. A method for establishing new sampling points with respect to previously established sampling points which determines said new sampling points for compressing character data on a character outline comprising:

a distance computing part for computing a distance L between adjacent sampling points, respectively, in respect of said sampling points which have been previously established on the outline;

an area computing part for computing area S enclosed by respective outline segments cut out by said adjacent sampling points as well as an approximate curve obtained by connecting said respective sampling points which have previously been established on said outline with each other;

an appreciation quantity computing part for computing appreciation quantity ξ being a ratio S/L in respect of each segment on the basis of said distance L computed in said distance computing part and said area S determined in said area computing part;

a computing part for comparing magnitude of the maximum value ξ_{max} of the appreciation quantity determined by said appreciation quantity computing part with that of a predetermined allowable value ξ'; and

a newly-established sampling point computing part for computing further new sampling points on the basis of a prescribed relationship in the case when the result compared in said comparing part is in $\xi_{max} > \xi'$;

all the newly-established sampling points computed successively until the compared result turns to a relationship of $\xi_{max} \leqq \xi'$ being established each time on said outline as desired sampling points.

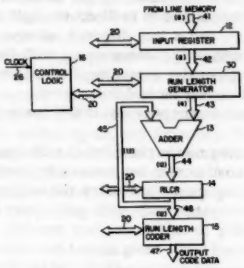
4,542,413
FACSIMILE DEVICE FOR RUN LENGTH CODING

Krishna Rallapalli, San Jose, and Shinkyo Kaku, Los Gatos, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Aug. 19, 1983, Ser. No. 524,817

Int. Cl.⁴ H04N *7/12*

U.S. Cl. 358—261 **16 Claims**



1. A facsimile device for encoding the run lengths of color units in lines of digitized picture data, said device comprising

means responsive to consecutive blocks of said picture data in parallel for generating the run length of color units in a data block,

combining means responsive to said generating means for generating the run lengths of color units in more than one data block, and

first encoding means responsive to said generating means and said combining means for generating in a predetermined code the run lengths of color units independent of said blocks.

4,542,414
ORIGINAL READING APPARATUS

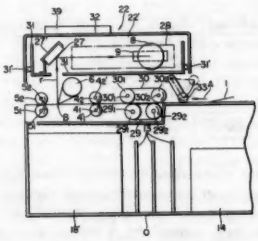
Hiromichi Nagane, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 15, 1983, Ser. No. 523,186

Claims priority, application Japan, Aug. 24, 1982, 57-146478; Aug. 31, 1982, 57-149935

Int. Cl.⁴ H04N *1/04, 9/10, 1/10, 1/40*

U.S. Cl. 358—285 **6 Claims**



1. An original reading apparatus comprising:

a lower box member;

an upper box member;

support means supporting said upper box member openably and closably relative to said lower box member, said support means being provided on said lower box member and rotatably supporting said upper box member beside an original conveyance path in a direction perpendicular to a direction of conveyance of the original;

image reading means provided in said upper box member

and having a solid state image sensor means disposed in said upper box member and out of a conveyance path of the original, and an optical system for projecting the image of an original onto said solid state image sensor means, said optical system having a first mirror facing downward so as to be opposed to the original, for reflecting the light from the original in the direction opposite to the direction of conveyance of the original, a second mirror for reflecting the light from said first mirror in a traverse direction intersecting the direction of conveyance of the original so as to direct the light to said image sensor means, and a lens disposed between said second mirror and said image sensor means with the optical axis of said lens oriented in a traverse direction intersecting the direction of conveyance of the original;

first conveyance means provided in said lower box member; and

second conveying means provided in said upper box member, said second conveying means cooperating with said first conveying means to convey the original along said original conveyance path with said upper box member closed relative to said lower box member, the original being conveyed while being nipped between said first and second conveying means with the image bearing surface of the original facing upward, and said image reading means reading the information on the upper surface of the original;

said second conveying means being adapted to become spaced apart from said first conveying means when said upper box member is opened relative to said lower box member, thereby enabling the original to be removed from between said first and second conveying means.

4,542,415

TRACKING ERROR DETECTING DEVICE FOR DISC-TYPE VIDEO SIGNAL RECORDER/REPRODUCER

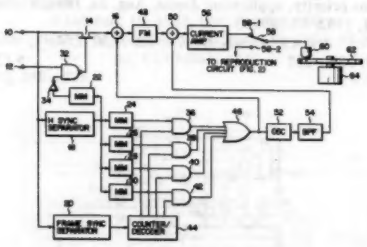
Kenji Kimura, Tachikawa, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 16, 1983, Ser. No. 466,831

Claims priority, application Japan, Feb. 26, 1982, 57-29856

Int. Cl.[4] G11B *21/10*; H04N *5/78*

U.S. Cl. 358—342 **16 Claims**



1. A tracking information detecting system for a video signal recorder/reproducer for recording/reproducing a video signal by tracing along tracks annularly formed on a disc-shaped recording medium rotated by a motor at a predetermined angular velocity, said video signal including a horizontal synchronizing signal, said detecting system comprising:

first means for recording on said recording medium a pilot signal having a frequency at least ten times higher than that of the horizontal synchronizing signal together with a video signal by shifting the phase of the pilot signal a predetermined amount for every track; and

second means for reproducing the video signal and the pilot signal previously recorded on said recording medium and for detecting the phase difference between the horizontal synchronizing signal and the pilot signal at every track so as to obtain a tracking information corresponding to said phase difference;

said first means comprising:

a first pulse generator for producing a first pulse per one revolution of said recording medium;

a second pulse generator for producing a second pulse in synchronism with the horizontal synchronizing signal, said second pulse having a width which is sequentially and periodically varied in response to the first pulse output from said first pulse generator; and

an oscillator for producing a pilot signal in synchronism with a trailing edge of said second pulse; and

said second means comprising:

extracting means for extracting a horizontal synchronizing signal and a pilot signal from a reproduction signal; and

detecting means for detecting a phase difference between the extracted pilot signal and the extracted horizontal synchronizing signal.

4,542,416

SYSTEM FOR ELIMINATING VERTICAL TV PICTURE FLUCTUATIONS APPEARING IN MONITORED VIDEO SIGNALS FROM A VTR

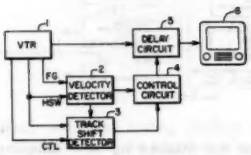
Masahiro Honjo, and Masao Tomita, both of Neyagawa, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 252,015, Apr. 8, 1981, abandoned. This application Sep. 1, 1983, Ser. No. 528,664

Claims priority, application Japan, Apr. 11, 1980, 55-48361

Int. Cl.[4] H04N *5/783*

U.S. Cl. 360—10.3 **3 Claims**



1. A system for eliminating vertical TV picture fluctuations appearing in monitored video signals reproduced from a magnetic tape by video tape recorder connected to a TV display, said system comprising:

a delay circuit connected between said video tape recorder and said TV display for delaying said video signals;

a velocity detector which is connected to said video tape recorder and which is supplied with both an FG signal for indicating a speed of said magnetic tape and an HSW signal for selecting a magnetic head of said VTR so as to detect said speed of said magnetic tape, both said FG signal and said HSW signal being generated in said VTR;

a track shift detector which is connected to said video tape recorder and which is supplied with both said HSW signal and a CTL signal which has been previously recorded on said magnetic tape and reproduced by said VTR so as to detect a shift of said magnetic head on a video track which has been recorded on said magnetic tape and has been scanned by said magnetic head; and

a control circuit connected to said delay circuit and said velocity and track shift detectors for controlling said delay circuit in accordance with both an output signal from said velocity detector and an output signal from said track shift circuit;

wherein said delay circuit selectively delays said video signal in each video signal field for one of a plurality of predetermined delay times, and wherein said control circuit selects one of said plurality of predetermined delay times in accordance with a delay time of video signals which have occurred in a previous video signal field in

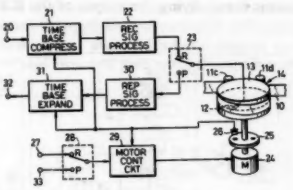
which said track shift detector has detected a shift of said magnetic head on said video track, such that the number of horizontal sync signals occurring between adjacent vertical sync signals is kept substantially constant.

4,542,417

VIDEO SIGNAL MAGNETIC RECORDING AND REPRODUCING SYSTEM

Yoshihiko Ohta, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Kanagawa, Japan

Filed Jun. 2, 1982, Ser. No. 384,364
Claims priority, application Japan, Jun. 8, 1981, 56-87659
Int. Cl.[4] H04N *5/76*
U.S. Cl. 360—9.1 **9 Claims**



1. A recording system for a helical scan type magnetic video signal recording apparatus, said recording apparatus comprising a guide drum including a rotary drum, signal rotary magnetic head means mounted on the rotary drum, a pair of guide poles for guiding and wrapping a magnetic tape around an outer peripheral surface of said guide drum over an angular range of θ, where θ, is smaller than 360° , and rotation detecting means for producing a square wave signal having a frequency responsive to the rotational speed of said rotary drum, said head means forming tracks which are oblique to the longitudinal direction of the magnetic tape, said head means undergoing one revolution in a time period t which is equal to the length of one field of an input video signal, said head means being out of contact with the magnetic tape for a predetermined time period Δt in each revolution thereof as said head means rotates over an angle of $(360° - \theta)$, said recording system comprising:

first and second memory means supplied with the input video signal;

clock pulse generating means for generating a write-in clock pulse signal and a read-out clock pulse signal, said write-in clock pulse signal having a frequency which is lower than a frequency of the read-out clock pulse signal;

switching means responsive to the output square wave signal of the rotation detecting means for selectively supplying the write-in and read-out clock pulse signals to the first and second memory means; and

adding means for adding output signals of the first and second memory means,

said switching means repeating an operation in which the write-in clock pulse signal is supplied to the first memory means during a first time period and the read-out clock pulse signal is supplied to the first memory means during an immediately subsequent second time period, said first time period having a length $(t+\Delta t)$ so that the first memory means writes therein the video signal corresponding to $(t+\Delta t)$ fields, where Δt is smaller than t, said second time period having a length $(t-\Delta t)$ so that the first memory means reads therefrom the stored video signal within a time period $(t-\Delta t)$ and produces the read out video signal as a first time base compressed output signal,

said switching means also repeating an operation in which the write-in clock pulse signal is supplied to the second memory means during a third time period and the read-out clock pulse signal is supplied to the second memory means during an immediately subsequent fourth time period, said third time period starting from a time which is after a starting point of the first time period by a time t, said third time period having a length $(t+\Delta t)$ so that the second memory means writes therein the video signal corresponding to $(t+\Delta t)$ fields, said fourth time period having a length $(t-\Delta t)$ so that the second memory means reads therefrom the stored video signal within a time period $(t-\Delta t)$ and produces the read out video signal as a second time base compressed output signal,

said adding means producing an added signal which time-sequentially comprises the first and second time base compressed output signals of the first and second memory means, said added signal having an information signal blank of Δt between the first and second time base compressed output signals,

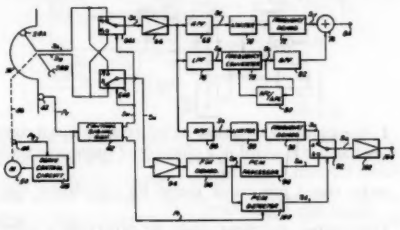
said head means being supplied with the added signal of said adding means, said head means recording the first time base compressed output signal on a first track, rotating over the angle of $(360° - \theta)$ during the information signal blank of the added signal, and recording the second time base compressed output signal on a second track which is adjacent to the first track, so that each of the first and second tracks contains time base compressed video information corresponding to $(t+\Delta t)$ fields of the input video signal.

4,542,418

METHOD AND APPARATUS FOR REPRODUCING AN INFORMATION SIGNAL COMPRISED OF A VIDEO SIGNAL AND AUDIO SIGNAL

Shigeyuki Yoneyama, Tokyo; Kenji Nakano, Ebina; Hisayoshi Moriwaki, Isehara, and Takao Takahashi, Sagamihara, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 21, 1983, Ser. No. 459,933
Claims priority, application Japan, Jan. 22, 1982, 57-9414
Int. Cl.[4] H04N *5/91*
U.S. Cl. 360—19.1 **15 Claims**



1. Apparatus for reproducing an information signal recorded in a plurality of successive parallel tracks on a record medium and comprised of a video signal and at least one of a frequency-modulated audio signal and a digitized audio signal, with the video signal and frequency-modulated audio signal being recorded only in a main section of each track and the digitized audio signal being recorded only in an overscan section of each track, said apparatus comprising:

transducer means for scanning said tracks to reproduce said information signal recorded in said plurality of successive parallel tracks;

separation means for separating said information signal reproduced during scanning of the main section of each track by said transducer means and a signal reproduced during scanning of the overscan section of each track by said transducer means;

detecting means for detecting whether said separated signal reproduced during scanning of said overscan section of each track includes a digitized audio signal and producing a detection signal in response thereto;

output means; and

switch means for switching an audio signal corresponding to one of the digitized audio signal and frequency-modulated audio signal to the output means in response to the detection signal.

4,542,419

METHOD AND APPARATUS FOR RECORDING AND REPRODUCING AN INFORMATION SIGNAL COMPRISING A VIDEO SIGNAL AND AUDIO SIGNAL

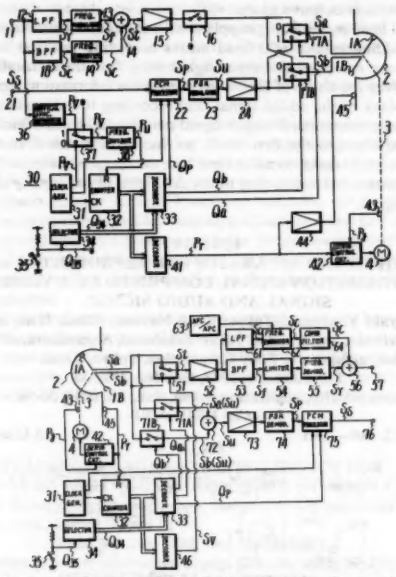
Minoru Morio, Tokyo; Kenji Nakano, and Hisayoshi Moriwaki, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 2, 1983, Ser. No. 463,337

Claims priority, application Japan, Feb. 2, 1982, 57-15287

Int. Cl.[4] H04N *5/91*

U.S. Cl. 360—19.1 **18 Claims**



1. Apparatus for recording an information signal comprising at least an audio signal in a plurality of successive tracks on a record medium, comprising:

audio signal processing means for converting said audio signal into digital form;

video signal processing means for processing a video signal of said information signal to produce an output video signal;

transducer means for recording said output video signal and said digitized audio signal in said plurality of successive tracks on said record medium;

switch means for supplying said output video signal and said digitized audio signal to said transducer means; and

control means for controlling said switch means to supply said output video signal and said digitized audio signal to said transducer means during a video use mode so that said transducer means records the output video signal in a main section of each track and the digitized audio signal in an overscan section of each track and to supply only said digitized audio signal to said transducer means during an audio use mode so the said transducer means records the digitized audio signal in at least one of the main section and overscan section of each track.

4,542,420

MANCHESTER DECODER

Tony J. Kozlik, and Robert L. Spiesman, both of Phoenix, Ariz., assignors to Honeywell Inc., Phoenix, Ariz.

Filed Jan. 24, 1984, Ser. No. 573,884

Int. Cl.[4] G11B *5/09*

U.S. Cl. 360—42 **7 Claims**

1. A decoder for Manchester encoded data signals, the binary data of which is included in Manchester bit cells with each Manchester bit cell being divided into two half-bit cells, the binary data of the cell being determined by the voltage level transition occurring between two half-bit cells, comprising:

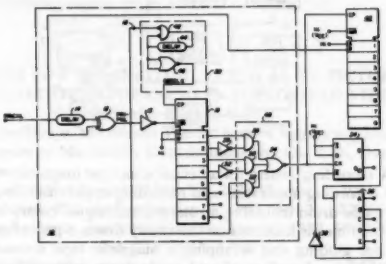
an EXCLUSIVE-OR gate for producing a primary pulse, said EXCLUSIVE-OR gate having two input terminals;

circuit means for applying the data signals directly to one input terminal of the EXCLUSIVE-OR GATE MEANS;

circuit means including a delay circuit for applying the data signals to the other input of the EXCLUSIVE-OR gate means;

a delay line oscillator means having an enable terminal for producing a square wave decode clock signal when enabled;

circuit means for applying the output of the EXCLUSIVE-



OR gate to the enable terminal of the delay line oscillator;

a decoder shift register having a clock input terminal, a master reset input terminal, and "n" output terminals where "n" is an integer other than zero;

inverter circuit means for applying the output of the EXCLUSIVE-OR gate means to the master reset input terminal of the decoder shift register;

circuit means for applying the square wave decode clock signal produced by the delay line oscillator to the clock terminal of the decoder shift register;

logic circuit means to which the primary pulse and selected ones of the output terminals of the decoder shift register are applied for producing a receive clock signal, said receive clock signal having a voltage transition of one type substantially in the center of each half-bit cell of the data signal;

a receive data serial in parallel out shift register having a clock input terminal and a data input terminal;

circuit means for applying the data signals to the data input terminal of the receive data shift register; and

circuit means for applying the receive clock signal to the clock terminal of the receive data shift register to shift the voltage levels of each half-bit cell of a Manchester bit cell into the receive data shift register with the voltage level so shifted being substantially from the middle of each half-bit cell of a Manchester bit cell.

4,542,421

MUTING CIRCUIT IN COMBINATION WITH A TAPE RECORDER

Kenji Fujibayashi, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 361,864, Mar. 25, 1982, which is a continuation of Ser. No. 122,608, Feb. 19, 1980, abandoned. This application May 24, 1982, Ser. No. 381,572

Claims priority, application Japan, Mar. 26, 1979, 54-38923

Int. Cl.[4] G11B *5/02, 15/12*

U.S. Cl. 360—67 **3 Claims**

1. A tape recorder apparatus, comprising:

an amplifier section having a muting function and a tape deck section including a magnetic head and a switch circuit for supplying a muting release instruction in accor-

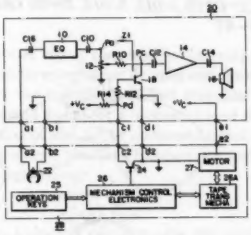
dance with an operation mode of said tape deck section, wherein said tape deck section is selectively connectable to and detachable from said amplifier section,

said amplifier section comprising:

equalizer means including an input circuit adapted to be connectable to said magnetic head for providing an equalized output corresponding to an output from said magnetic head when said tape deck section is connected to said amplifier section;

first amplifier means connected to said equalizer means for amplifying, with a given bias potential, said equalized output and for providing a first output;

second amplifier means connected to said equalizer means for amplifying, with said given bias potential, said equalized output and for providing a second output which is inverted relative to said first output, and terminal means for applying the potential difference between said first output and said second output to an output load of said first and said second amplifier means;



bias means for supplying said given bias potential to said first and said second amplifier means, said given bias potential serving to enable the amplifying function of said first and said second amplifier means; and

muting means, coupled to said bias means and adapted to be connectable to said switch circuit, for changing said given bias potential in the absence of said muting release instruction, so that the amplifying function of said first and said second amplifier means is disabled,

wherein said muting release instruction is withheld from said muting means when said tape deck section is detached from said amplifier section so that an output load coupled to said terminal means is free from noises produced in said equalized output of said equalizer means when the input circuit of said equalizer means is disconnected from said magnetic head each time said tape deck section is detached from said amplifier section.

4,542,422

ELECTROMAGNETIC TRANSDUCER HEAD ASSEMBLY

Yasuomi Namiki, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Japan

Filed Nov. 9, 1982, Ser. No. 440,406

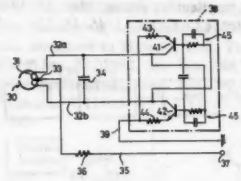
Claims priority, application Japan, Nov. 13, 1981, 56-168356[U]; Feb. 17, 1982, 57-22878

Int. Cl.⁴ G11B *5/02*

U.S. Cl. 360—67 **8 Claims**

1. An electromagnetic transducer head assembly for use in magnetic recording, comprising: a ferromagnetic core structure having a magnetic gap, a winding mounted on said core structure, a capacitor mounted in proximity to and connected to the winding to form a resonance circuit, and amplifying means mounted in proximity to and connected to the resonance circuit for generating an alternating current in said winding,

said amplifying means comprising a pair of transistors each having a control electrode and first and second controlled electrodes, the first controlled electrodes of said transistors being connected together and the second controlled electrodes of said transistors being connected through said winding, the second controlled electrode of each transistor being connected through a parallel combination of a resistor and a capacitor to the control electrode of the other transistor, a first conductor connected from a midpoint of said winding to a first terminal of a DC voltage



source and a second conductor connected from a junction between said first controlled electrodes to a second terminal of the voltage source.

4,542,423

ROTATION CONTROL DEVICE FOR INFORMATION RECORDING DISC

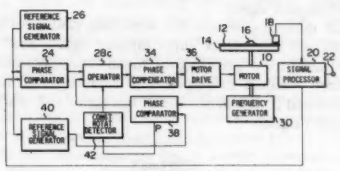
Eiichi Kotake; Ken Enami, both of Fujieda, and Kinzo Wada, Yokohama, all of Japan, assignors to Victor Company of Japan, Yokohama, Japan

Filed Oct. 12, 1983, Ser. No. 541,216

Claims priority, application Japan, Oct. 15, 1982, 57-181046

Int. Cl.⁴ G11B *19/24*

U.S. Cl. 360—73 **6 Claims**



1. A rotation control device for rotating a disc on which an information signal and a sync signal are recorded, comprising:

a motor for causing the disc into rotation;

rotation signal generator means for generating a rotation signal having a frequency which is proportional to a rotation speed of said motor;

first reference signal generator means for generating a first reference signal which is identical in frequency with the sync signal;

first phase comparator means for generating a first difference signal responsive to a phase difference between the sync signal read out of the disc and the first reference signal;

second reference signal generator means for generating a second reference signal while the motor rotates the disc for reproducing the sync signal having said frequency out of the disc, said second reference signal being identical in frequency with the rotation signal output from the rotation signal generator means;

second phase comparator means for generating a second difference signal responsive to a phase difference between the rotation signal output from the rotation signal generator means and the second reference signal;

operator means for performing a predetermined operation with the first and second difference signals to generate a signal as a result of the operation;

phase compensator means for compensating a phase of the signal output from said operator means to generate a phase compensated signal; and

motor drive means for driving the motor in response to the phase compensated signal.

4,542,424

TAPE SPEED CONTROL APPARATUS

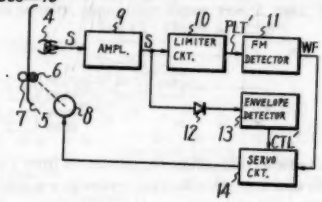
Mitsugu Ishihara, Sagamihara, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 10, 1982, Ser. No. 356,742

Claims priority, application Japan, Mar. 25, 1981, 56-42285

Int. Cl.⁴ G11B *15/46, 15/52*

U.S. Cl. 360—73 **8 Claims**



1. In an information signal reproducing apparatus including first rotary transducer means for reproducing an information signal recorded in at least one information signal track on a record medium, apparatus for controlling the speed of advancement of said record medium comprising:

second transducer means for reproducing a superimposed signal recorded in a control track on said record medium, said superimposed signal being comprised of a control signal and a pilot signal having a predetermined frequency amplitude modulated by said control signal;

first detecting means for detecting a frequency fluctuated component of said pilot signal from said reproduced superimposed signal;

second detecting means for detecting said control signal from said reproduced superimposed signal; and

drive means for controlling the speed of advancement of said record medium in response to said detected frequency fluctuated component of said pilot signal and said detected control signal.

4,542,425

APPARATUS FOR READING A RECORD CARRIER

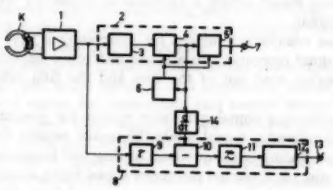
Edmond de Niet, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 23, 1982, Ser. No. 452,566

Claims priority, application Netherlands, Sep. 20, 1982, 8203618

Int. Cl.⁴ G11B *5/58*

U.S. Cl. 360—77 **3 Claims**



1. An apparatus for reading a record carrier which comprises information tracks which in addition to an information signal also contain tracking signals, which apparatus comprises a read element for reading the information recorded in the information tracks, a signal-processing circuit for processing the information signal present in the information that is read and a servo control system for deriving an error signal fron the tracking signals extracted from the information that is read, which error signal is representative of the position of the read element relative to the information track that is being read in a direction transverse to the track direction and tfor controlling the position of said read element relative to said information track in response to said error signal, characterized in that for reading a record carrier on which a digital information signal has been recorded the signal processing circuit is adapted to regenerate said digital information signal, the apparatus further comprises a correction circuit, which is coupled to said signal processing circuit, for receiving the regenerated digital information signal, and the servo control system comprises a compensation circuit, which is coupled to the output of the correction circuit, for reducing cross-talk components of the digital information signal in the tracking signals, said correction circuit having a transfer characteristic which at least within the frequency band of the tracking signals at least approximates the transfer characteristic of the chain comprising the recording element used for recording the information, the record carrier and the read element.

4,542,426

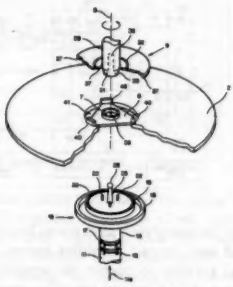
FLEXIBLE HUB FOR REMOVABLE DISK

Richard A. Wilkinson, Jr., Boulder; William C. Hunt, Lafayette, and David W. Rickert, Boulder, all of Colo., assignors to Storage Technology Partners II, Louisville, Colo.

Filed May 31, 1983, Ser. No. 499,667

Int. Cl.⁴ G11B *5/012, 5/016, 23/02;* **G01D** *15/24*

U.S. Cl. 360—97 **8 Claims**



1. A flexible hub for use with a removable flat disk said disk having a relatively large first hole in the center thereof, said flexible hub comprising:

a stiff yet flexible planar piece of material having a second hole substantially in the center thereof, said planar material being attached to the periphery of the first hole of said flat disk at at least three locations, said planar material having lateral dimensions that cause it to be bowed when attached to the periphery of the first hole and

a collar affixed to said planar material in the second hole thereof, said collar having a tapered inner edge.

4,542,427

MAGNETIC TAPE SETTING DEVICE FOR USE IN MAGNETIC TAPE RECORDING AND/OR REPRODUCING APPARATUS

Kiichirou Nagai, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 288,041, Jul. 29, 1981,. This application Mar. 27, 1984, Ser. No. 593,189

Claims priority, application Japan, Aug. 4, 1980, 55-110415[U]

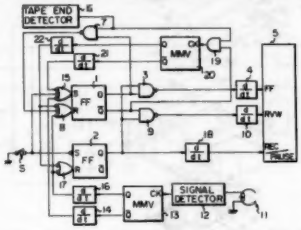
Int. Cl.⁴ G11B *15/18*

U.S. Cl. 360—72.1 **1 Claim**

1. In a magnetic tape recording and playback device which includes a magnetic tape, at least one magnetic head for producing an electric signal having an amplitude representative of information recorded on said magnetic tape, drive means for relatively moving the magnetic tape across the magnetic head in at least a fast-forward direction, a reverse direction, and a forward direction in a play mode in response to respective FF, RVW, and PLAY command signals, and limit detection means for detecting the beginning and end of said magnetic tape, the improvement comprising:

a start command signal generating means for producing a start command signal on demand; and

a start point locating means for positioning said magnetic head at a beginning point of a non-recorded area of said magnetic tape in response to said start command signal, said start point locating means including sequence means connected to said magnetic head and said limit detection means, for producing in an ordered sequence, said FF command signal until said limit detection means detects the end of said magnetic tape, said RVW command signal



until said electric signal detected by the magnetic head exceeds a predetermined level or until said limit detection means detects the beginning of said magnetic tape, and said FF command signal for a predetermined time period after termination of said RVW command signal thereby to position the magnetic head at a location from which information can be recorded.

4,542,428

DISK FOR MEASURING OFF-TRACK QUANTITY OF MAGNETIC HEAD, AND MEASURING APPARATUS USING THE DISK

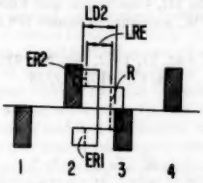
Masahiro Yanagi, Settsu, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

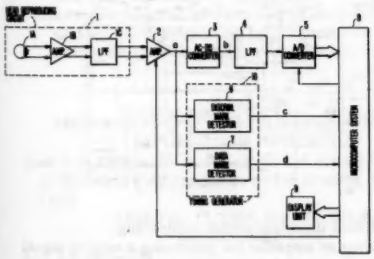
Filed Sep. 28, 1983, Ser. No. 536,459

Claims priority, application Japan, Oct. 1, 1982, 57-173541; Dec. 9, 1982, 57-216602

Int. Cl.[4] G11B *5/58, 23/36*

U.S. Cl. 360—75 **4 Claims**





1. A disk for measuring an off-track quantity of a magnetic head having burst-like data alternately recorded on said disk over one round of tracks in directions of inner and outer circumferences with the track center of a desired track as a border, said burst-like data being recorded in such a manner that each data length is shorter than a distance between an R/W gap of a magnetic head for reproducing said data and an erase gap, and that a distance between said data is longer than said distance between said R/W and said erase gap.

4,542,429

APPARATUS FOR REDUCING STARTING ADHESION BETWEEN A MAGNETIC DISC AND FLYING HEAD

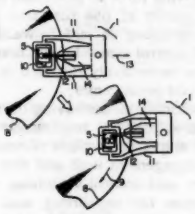
Hiroshi Nishida, Kanagawa, and Toshiyuki Haruna, Odawara, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 19, 1982, Ser. No. 340,700

Claims priority, application Japan, Jan. 28, 1981, 56-10241

Int. Cl.[4] G11B *5/60, 17/32, 21/02*

U.S. Cl. 360—103 **12 Claims**



6. A magnetic disc memory apparatus comprising a magnetic disc, a magnetic head, means for supporting said magnetic head so that said magnetic head is in contact with a surface of said magnetic disc substantially at all times when said magnetic disc is stationary and for enabling said magnetic disc to float upon rotation of said magnetic disc, magnetic head positioning means for positioning said magnetic head at a desired track on said magnetic disc by way of said magnetic head supporting means, means for rotating said magnetic disc, and control means for energizing said magnetic head positioning means and said means for rotating said magnetic disc, said control means prior to energizing said means for rotating said magnetic disc energizing said magnetic head positioning means to displace said magnetic head from a contact position thereof with a surface of said magnetic disc in a radial direction of said magnetic disc so as to obviate adhesion between said magnetic head and said magnetic disc before starting rotation of said magnetic disc.

4,542,430

TAPE RECORDER

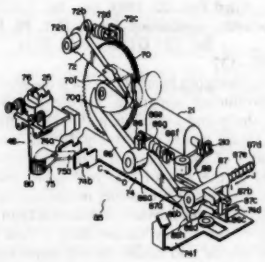
Seiji Tomita, Yokosuka; Kaoru Morinaga, and Yoshihiro Kotoda, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Sep. 17, 1982, Ser. No. 419,601

Claims priority, application Japan, Nov. 25, 1981, 56-188892

Int. Cl.[4] G11B *5/55, 21/08*

U.S. Cl. 360—106 **14 Claims**



1. A tape recorder having a head for recording and playing back a tape,

forward/reverse switching means for switching from forward tape travel to reverse tape travel at normal speed and vice versa,

track switching means for supporting and moving said head between positions corresponding to track of the tape in accordance with reverse tape travel and forward tape travel at normal speed; and

drive means for moving said head into the position where said head corresponds to the track of the tape in accordance with one of reverse tape travel and forward tape travel at normal speed by driving said track switching means in response to a switching operation of said forward/reverse switching means, wherein said drive means includes:

(a) control means pivotal about a pivot center and receiving a pivotal driving force to pivot said control means about said pivot center in one direction in response to the switching operation of said forward/reverse switching means, said control means having first and second engaging portions respectively disposed at different positions relative to said pivot center;

(b) control switching means having third and fourth engaging portions at positions respectively opposing said first and second engaging portions of said control means for respective engagement with said first and second engaging portions, said control switching means including (1) support means for supporting said control switching means for (i) rectilinear movement between advanced and retracted positions to permit selective engagement of said third and fourth engaging portions with said first and second engaging portions, respectively, and (ii) pivotal movement in forward and reverse directions about a pivot axis, and (2) moving means for rectilinearly moving said control switching means between said advanced and retracted positions, said control switching means respectively pivoting in said forward or reverse directions in dependence upon its being in said advanced or retracted positions which inturn causes selective respective engagement between said first and second engaging portions and said third and fourth engaging portions in response to said control means pivoting in said one direction; and

(c) drive slider means operatively interconnecting said control switching means and said track switching means and mounted for reciprocal sliding movement between forward and reverse positions in response to said control switching means pivoting between said forward and reverse directions, respectively, said drive slider means for driving said track switching means to move said head between positions corresponding to tracks of the tape in accordance with forward tape travel and reverse tape travel in dependence upon said drive slider means moving between said forward and reverse positions, respectively.

4,542,431

MODE CHANGING MECHANISM FOR CASSETTE TAPE PLAYER

Mitsuru Ida, Koshigaya, Japan, assignor to Sony Corporation, Tokyo, Japan

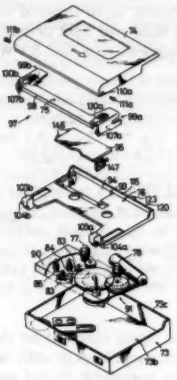
Filed Dec. 22, 1981, Ser. No. 333,578

Claims priority, application Japan, Dec. 29, 1980, 55-188031

Int. Cl.[4] G11B *15/18, 5/54*

U.S. Cl. 360—137 **19 Claims**

1. A mode changing mechanism for a cassette tape recording and/or reproducing apparatus having parallel take-up and supply reel shafts and a capstan, and driving means including a motor and rotary means selectively driven from said motor in various modes of the apparatus and being rotatable about an axis parallel to the axis of said reel shafts and capstan: said mechanism comprising projecting means on said rotary means; mode changing means movable substantially in a plane normal to said axis of the rotary means from a first position corresponding to one of said modes of said apparatus through second and third positions, in turn, to a fourth position corresponding to another of said modes of the apparatus; mode selecting means manually actuable from an inoperative position to an operative position for directly displacing said mode changing means from said first position to said second position where said mode changing means is engageable with said projecting means and is driven thereby to said third position in response to rotation of said rotary means by said motor; and



bias means effective, when said mode changing means attains said third position thereof, to bias said mode changing means to said fourth position in which said mode changing means is disengaged from said projecting means.

4,542,432

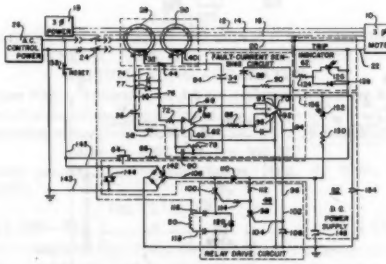
GROUND FAULT DETECTION CIRCUIT

Edward L. Nichols, III, Clearwater, and Edward A. Harrison, Largo, both of Fla., assignors to Square D Company, Palatine, Ill.

Filed Aug. 27, 1982, Ser. No. 412,454

Int. Cl.[4] H02H *3/28*

U.S. Cl. 361—44 **23 Claims**



1. A ground fault detection circuit comprising:

means including an amplifier for producing a sensing signal in response to ground fault current exceeding a preselected value; and

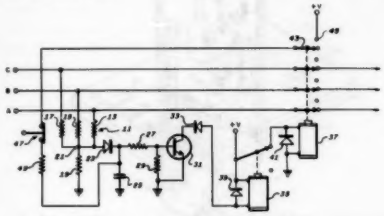
a band pass filter including a series RLC circuit coupled to the input of the amplifier for providing a frequency response to said sensing signal producing means to minimize sensitivity to noise in selected portions of the frequency spectrum.

4,542,433

MISSING PHASE DETECTOR

Martin A. Schaefer, St. Petersburg, and David J. Sawayda, Clearwater, both of Fla., assignors to Sperry Corporation, New York, N.Y.

Filed Sep. 1, 1983, Ser. No. 528,505
Int. Cl.⁴ H02H 3/24
U.S. Cl. 361—92 **5 Claims**



1. An unbalance protection apparatus for a multiple transmission line, multiphase electrical transmission system comprising:

means for providing a signal voltage representative of a vector sum of voltages on individual transmission line of said multiphase electrical transmission system;

means for providing a voltage source;

a first relay having a coil and a wiper arm coupled at a first end to said voltage source means and in movable contact at a second end between first and second terminals;

switch means coupled in series with said voltage source and said coil of said first relay and switchable between current conductive and nonconductive states in response to said signal voltage for energizing and deengerizing said coil of said first relay such that said wiper arm is movably coupled to said first and second terminals in response to said current conductive and non-conductive states;

a second relay having a coil coupled to said first terminal of said first relay, a multiplicity of wiper arms respectively coupled in said transmission lines to control current flow in said transmission lines in response to terminal contact positions of said wiper arm of first relay, and having at least one wiper arm with one end coupled to said switch means and a second end contact movable between two terminals in response to said terminal contact positions of said wiper arm of said first relay, one of said two terminals being coupled to said voltage source means, whereby once said signal voltage exceeds a predetermined threshold, causing a responsive state for said switch means and thereby actions of said first and second relays to place said at least one wiper arm of said second relay in contact with said one terminal coupled to said voltage source means, said switch means remains in said signal voltage responsive state; and

reset means coupled between said at least one wiper arm of said second relay and said switch means for resetting said switch means to a pre-signal voltage responsive state.

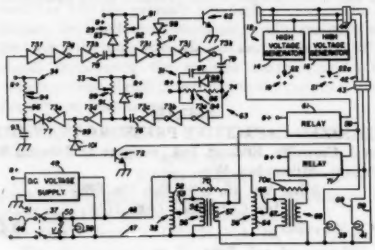
4,542,434

METHOD AND APPARATUS FOR SEQUENCED BIPOLAR AIR IONIZATION

Scott J. S. Gehlke; Michael G. Yost, and Arnold J. Steinman, all of Berkeley, Calif., assignors to Ion Systems, Inc., Berkeley, Calif.

Filed Feb. 17, 1984, Ser. No. 581,421
Int. Cl.⁴ H05F 3/06
U.S. Cl. 361—231 **16 Claims**

1. In a method of controlling the ion content of air within a predetermined region including the steps of periodically generating positive air ions at a first location and periodically generating negative air ions at a second spaced apart location during the intervals between periods of positive ion generation and wherein said positive and negative ions disperse outwardly from said first and second locations respectively and intermix within said region, the further step comprising:



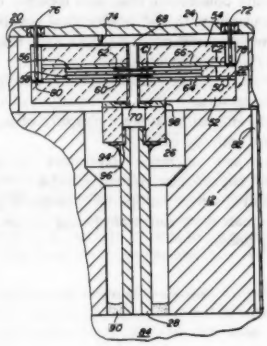
delaying said intermixing of said ions by delaying each period of ion generation for a predetermined time interval following termination of the preceding period of ion generation.

4,542,435

PRESSURE TRANSDUCER AND MOUNTING

Paul J. Freud; Ronald D. Baxter, both of Furlong, and Paul M. Kroninger, Jr., Harleysville, all of Pa., assignors to General Signal Corporation, Stamford, Conn.

Filed Mar. 29, 1984, Ser. No. 594,588
Int. Cl.⁴ H01G 7/00; G01L 9/12
U.S. Cl. 361—283 **6 Claims**



1. A capacitive pressure measuring transducer comprising:

a diaphragm member formed of a single crystal of silicon by etching into both sides of said diaphragm recesses defining the deflecting region of said diaphragm;

a pair of support plates of silicon anodically bonded to opposite sides of said diaphragm along the periphery of said defecting region and having pressure communicating passages extending therethrough;

a thin layer of borosilicate glass interposed between said diaphragm and each of said support plates and extending over the entire surface of said support plates facing said diaphragm member to form pressure receiving cavities with said diaphragm recesses and to provide for electrical isolation and bonding between said diaphragm and said support plates, said layers being as thin as possible consistent with adequate bonding, acceptable stray capacitance and electrical isolation between said diaphragm and said plates; and

a metallized region deposited on the surface of each of said

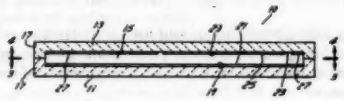
glass layers opposite the deflecting region of said diaphragm to form on opposing sides of said diaphragm variable capacitors whose capacitances change in opposite sense with changes in the pressure being measured.

4,542,436

LINEARIZED CAPACITIVE PRESSURE TRANSDUCER

Steven J. Carusillo, Elkhart, Ind., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Apr. 10, 1984, Ser. No. 598,727
Int. Cl.[4] H01G *7/00, 5/16*
U.S. Cl. 361—283 **10 Claims**



1. A capacitive pressure transducer adapted to be coupled to a capacitance transducing circuit and including;

a generally planar, electrically conductive base member supported upon a first insulative substrate;

a generally planar, electrically conductive sensor member supported upon a second insulative substrate in generally parallel, spaced relationship to said base member and coacting therewith to define a sensor capacitor;

an electrically conductive reference member disposed generally coplanar with and in electrical isolation from said sensor member and coacting with said base member to define a reference capacitor;

said sensor and reference members being configured in view of the characteristic operating equation of said transducing circuit and each having a plurality of segments interposed one with the other;

said sensor and reference capacitors having pressure-dependent capacitance values such that for discrete pressures selected within an operative range of pressures, the output signals from said transducing circuit will be substantially linear.

4,542,437

CATV PACKAGE DESIGNED FOR UNDERGROUND SYSTEM USE

William H. Ellis, and Leo C. Wise, Jr., both of Jupiter, Fla., assignors to Broadband Engineering, Inc., Jupiter, Fla.

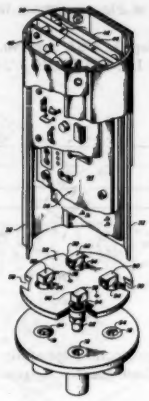
Filed Jul. 6, 1984, Ser. No. 628,255
Int. Cl.[4] H05K *7/20*
U.S. Cl. 361—386 **13 Claims**

1. An electrical component package comprising:

a T-plate including a vertically oriented first member and an orthogonal second member positioned proximate the bottom thereof;

a printed circuit board mounted to one side of said vertically oriented first member of said T-plate to produce an interior assembly, said printed circuit board having a right-angled coaxial connector at the bottom thereof extending through the second member of said T-plate;

a base having a top surface and at least one mating coaxial connector extending therethrough, with one portion of said mating connector exposed at the top surface of said base and receiving a mating portion of said right-angled connector, said base being secured to said T-plate such that said coaxial connectors mate; and



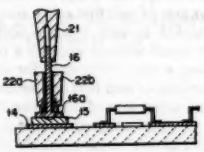
a cover over said interior assembly and said base to provide a vertically oriented package with a coaxial connector extending from said base.

4,542,438

HYBRID INTEGRATED CIRCUIT DEVICE

Toshio Yamamoto, Yokosuka, Japan, assignor to Toshiba Corporation, Kawasaki, Japan

Filed Aug. 31, 1982, Ser. No. 413,400
Claims priority, application Japan, Sep. 7, 1981, 56-139656
Int. Cl.[4] H05K *3/32*
U.S. Cl. 361—403 **5 Claims**



1. A hybrid integrated circuit device comprising:

a circuit substrate including an insulating substrate having two surfaces opposed to each other and a conductor circuit pattern having at least one connecting poad formed on one of the surfaces of said substrate;

circuit elements soldered to said conductor circuit pattern of said circuit substrate;

at least one metal piece plated with solder and soldered to said at least one connecting pad of said conductor circuit pattern of said circuit substrate, said metal piece having a free surface opposed to the surface oldered to said connecting pad; and

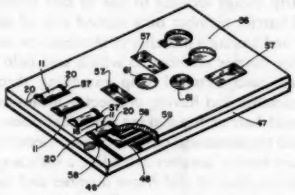
at least one lead wire having a T-shaped head and being plated with said solder, said at least one lead wire being soldered to said metal piece and welded at said T-shaped head to the free surface of said metal piece which is opposed to the surface soldered to said connecting pad so as to project from said circuit substrate.

4,542,439

SURFACE MOUNT COMPONENT

Bernard M. Dick, Lee's Summit, Mo., assignor to AT&T Technologies, Inc., New York, N.Y.

Filed Jun. 27, 1984, Ser. No. 625,273
Int. Cl.[4] H05K *1/18*
U.S. Cl. 361—405 **13 Claims**



1. An electrical surface mount component assembly, which comprises:

a substrate having a flat mounting surface and having a circuit pattern formed on such mounting surface, said circuit pattern including spaced contact pads;

at least one surface mount component including a body portion oriented longitudinally parallel and adjacent to said mounting surface of the substrate, said body portion housing the electrical component;

at least a first and a second lead having an inner end portion attached to the body portion and extending from the body portion parallel to said mounting surface of the substrate in a direction toward said spaced contact pads; and

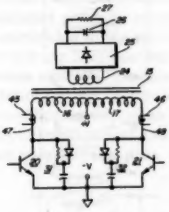
a circuit termination formed form an outer end portion of each lead into a shape which encompasses a projection of the shape of the body portion in the direction toward the formed termination, the termination of each lead being mounted to a respective one of the spaced contact pads to retain the component longitudinally oriented adjacent to the mounting surface of the substrate.

4,542,440

SWITCH CURRENT SENSING WITH SNUBBER CURRENT SUPPRESSION IN A PUSH-PULL CONVERTER

P. R. K. Chetty, Germantown, Md.; John Dhyanchand, and Pierre Thollot, both of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Nov. 2, 1983, Ser. No. 548,141
Int. Cl.[4] H02H *7/12*
U.S. Cl. 361—111 **10 Claims**



1. In a push-pull converter having a DC source, an output transformer with primary windings, a pair of power switches which conduct alternately to connect the power source with the primary windings of the output transformer and a turn-off snubber circuit connected with each of said power switches, the snubber circuits causing a snubber current to flow in both primary windings at a turn-on of each of said switches, each switch being connected by a conductor with an output transformer primary winding, a switch current sensing circuit comprising:

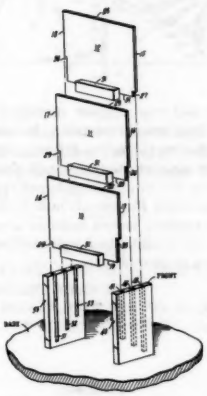
a current transformer having an output winding inductively coupled with each of said conductors which connect the switches and the primary windings of the output transformer, the conductors being physically arranged so that the switch currents through the conductors are 180° out of phase, suppressing the snubber current pulses in the switch current signal developed in the output winding of the current transformer.

4,542,441

CARD GUIDE

Frederick A. Perretta, Trumbull, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 470,366, Feb. 28, 1983, abandoned.
This application Feb. 25, 1985, Ser. No. 705,395
Int. Cl.[4] H05K *1/14*
U.S. Cl. 361—412 **1 Claim**



1. A ramped card guide for providing fully mutually exclusive insertion of multiple printed circuit boards into the guide, comprising:

one side having a plurality of slots of progressively varying depth, each slot for receiving one side edge of a circuit board;

another side having a plurality of slots of reciprocally progressively varying depth, as contrasted with the one side, each slot for receiving the other side edge of the circuit board;

wherein each circuit board has a unique combination of edge notches of depth corresponding to the respective depths of the slots into which the board is intended to be inserted so that full insertion of all boards is indicated by trailing edge correspondence.

4,542,442

APPARATUS FOR THE MOUNTING AND WIRING OF PRINTED CIRCUIT BOARDS

Rudolph A. Drexler, Bristol, Vt., assignor to Simmonds Precision Products, Inc., Tarrytown, N.Y.

Filed Jun. 17, 1983, Ser. No. 505,171
Int. Cl.[4] H01R *23/68*
U.S. Cl. 361—413 **27 Claims**

1. An apparatus adapted for mounting a plurality of electrical circuit boards of the type including indentations associated therewith, said apparatus comprising:

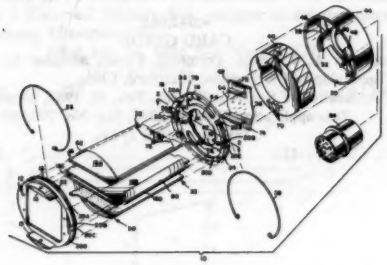
support means for supporting the circuit boards;

said support means including front and rear support members;

said front and rear support members including a plurality of

paired slots, each pair for receiving respective portions of a circuit board therein and for thereby mounting plural circuit boards, when received in respectively corresponding ones of said paired slots, substantially transversely to said front and rear support members and for separating adjacent ones of said circuit boards by a predetermined dimension when received in said slots; and

removeable locking means engageable with said front and rear support members for removeably locking the circuit boards



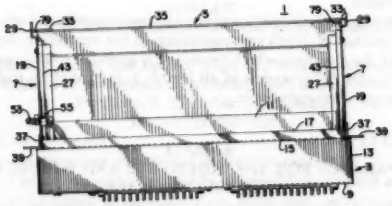
to said front and rear support members and for effecting substantially rigid interconnection therebetween, said locking means including (a) means defining recessed areas in said front and rear support members such that said indentations associated with the circuit boards are registrable with said recessed areas when the circuit boards are received in said slots, and (b) resilient means seatable in said recessed areas for engaging the circuit board indentations and thus locking the circuit boards in said slots.

4,542,443

TERMINATION FRAME ASSEMBLY WITH PROTECTION FROM EMI FROM FIELD WIRING AND RACK FOR SAME

Robert J. Rinefierd, Jr., Irwin, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 8, 1983, Ser. No. 520,977
Int. Cl.[4] H05K *7/14*
U.S. Cl. 361—415 **23 Claims**



1. A termination frame assembly for supporting a generally planar electronic circuit board and for isolating said board from electromagnetic interference from a bundle of field wiring which supplies signals to said board, said assembly comprising:

a substantially rectangular frame member having a front edge and a rear edge;

an electrically conductive barrier member extending inwardly from one face of said rectangular frame member generally in a direction perpendicular thereto and substantially across said one face with at least one portion of said barrier member spaced from the front edge of said frame member;

means for mounting said electronic circuit board on said frame member on one side of said barrier member between said barrier member and the rear edge of the frame member; and

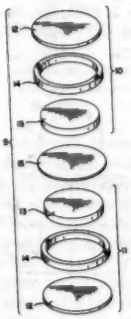
terminal strip means secured to one of said frame member and said barrier member on a second side of said barrier member and having a plurality of terminals on said second side of the barrier member to which said field wiring is connected, said terminal strip extending through said barrier member and having connector means on the one side of said barrier for making electrical connection between said terminals and circuits on said electronic circuit board, said barrier member extending a sufficient distance from said one face of said frame member and having said at least one portion spaced a sufficient distance from said front edge of the frame member to form a recess in which said bundle of field wiring can be routed from one side of said assembly across said frame member on the second side of said barrier member to the terminal strip means substantially without extending beyond the front edge of the assembly or beyond said barrier member in a direction perpendicular to said one face of the rectangular frame member.

4,542,444

DOUBLE LAYER ENERGY STORAGE DEVICE

Richard C. Boland, Lyndhurst, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

Filed Dec. 27, 1983, Ser. No. 565,997
Int. Cl.[4] H01G *9/00, 5/01, 1/01*
U.S. Cl. 361—433 **21 Claims**



1. An improved double layer energy storage cell, said cell containing a pair of electrodes, at least one of said electrodes being a carbon paste electrode, a porous ionically conductive separator and an ion insulating connector, the improvement wherein said carbon paste electrode comprises carbon exhibiting a pore volume of less than about 0.45 cc/gm and a median pore radius of less than about 150 Angstroms.

4,542,445
ELECTRIC LIGHT BALLOON

Michael Marietta, Bronx, N.Y., assignor to Louis J. Castaldo, Bronx, N.Y.

Filed Jan. 3, 1984, Ser. No. 567,934
Int. Cl.[4] F21V *33/00, 17/02*
U.S. Cl. 362—96 1 Claim

1. An electric light balloon, comprising a balloon, an elongated first housing containing a side and a top end adapted for insertion into said balloon; said first housing containing a first orifice at said top end in line with a longitudinal axis of said first housing, said first housing containing a second orifice at said side of said housing; a tubular hollow member having two ends, one end being rigidly attached to said first housing; a bulb mounted rigidly to said first housing and extending along said longitudinal axis wherein the light from said bulb passes through said first orifice so that said balloon can be illuminated; a valve inserted through said second orifice on said side of said first housing for inflating said balloon, said valve directing the incoming air upwardly along said longitudinal axis, said incoming air entering from a direction perpendicular to said longitudinal axis and then passing along said bulb and exiting into the balloon from said first orifice, whereby said bulb is in direct contact with said air which keeps said balloon inflated whereby heat transferred to said air will cause further increase in the size of said balloon due to the expansion of said air when said bulb is lit, and decrease the size of said balloon when said bulb is not lit, battery means for energizing said bulb, and a switch means for illuminating said bulb from said battery, further comprising a second housing mounted on the other end of said tubular member opposite the end where said first housing is mounted, wherein said switch means is mounted on said second housing, wherein said switch means comprises a rod containing a contact point pivotally mounted on said second housing; said rod containing a spring biasing means; so that an open and closed position can be effected to illuminate said bulb of said balloon, wherein said switch means further comprises a plate containing a set of contact points, wherein said plate is mounted to said second housing in a plane which is coplaner to that of the direction of travel of said rod, so that as said rod traverses the contact points of said plate, said bulb will intermittently blink.

4,542,446
DECORATIVE ORNAMENT HAVING GARLAND AND A LIGHT STRING

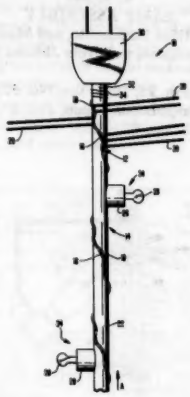
Max J. Shiff, Germantown, and Gene Davis, Memphis, both of Tenn., assignors to Decor Noel Corporation, Memphis, Tenn.

Filed Oct. 11, 1983, Ser. No. 540,876
Int. Cl.[4] A41G *1/00*
U.S. Cl. 362—122 22 Claims

1. A decorative ornament comprising:

(a) a garland having a center wire and a tinsel strip wound around the center wire, the tinsel strip being divided into a plurality of narrow strands; and

(b) a light string having an electric wire and a plurality of

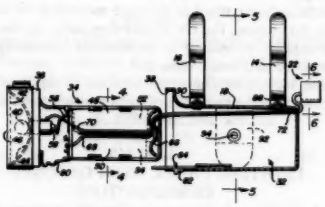


lights connected together by the electric wire, the light string being wound around the center wire of the garland in a direction opposite to the direction the tinsel strip is wound around the center wire.

4,542,447
FLASHLIGHT ATTACHMENT FOR FIREARMS

Timothy L. Quakenbush, Mattoon, Ill.

Filed May 18, 1984, Ser. No. 611,854
Int. Cl.[4] F21L *7/00;* F41G *1/34*
U.S. Cl. 362—183 10 Claims



1. A flashlight attachment for a firearm comprising a flashlight casing provided with a flashlight bulb, battery holding means and electrical circuit forming means for providing an electrical connection between the bulb and a battery in the holding means, attachment means for releasably securing the flashlight casing to a firearm in strategic position relative to the firearm barrel for directing a light beam emanating from the bulb toward a target, the circuit forming means including leads extending from the casing to a touch switch for closing the circuit, and the attachment further including means for releasably securing the touch switch to a handle of the firearm in position for operation through manual pressure thereon by a user gripping the firearm without the user having to release his or her grip wherein the means for releasably securing the touch switch on the firearm handle comprises a first friction fastener tab on the touch switch, a second complementary friction fastener tab, and means for securing the second friction fastener tab on the firearm handle wherein the means for securing the second friction fastener tab on the handle comprises a

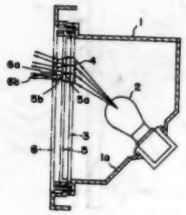
resilient handle-embracing band on which the second tab is secured.

4,542,448

LAMP ASSEMBLY

Yoshihiro Yamai; Hideo Hamamoto, and Masami Nishibe, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jan. 25, 1984, Ser. No. 573,656
Claims priority, application Japan, Jan. 27, 1983, 58-11563
Int. Cl.⁴ F21V *5/00*
U.S. Cl. 362—268 **1 Claim**



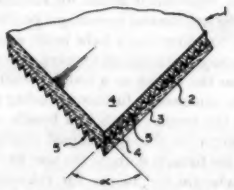
1. A lamp assembly comprising:
a housing having an opening;
a bulb for emitting light mounted within said housing;
optical element means positioned within the opening of said housing for converting the light from said bulb into parallel rays;
a condenser lens aligned adjacent said optical element means and including complementary pairs of concave and convex elements on opposing sides of said lens for converting said parallel rays passing through said optical element means into beams of light;
an outer lens adjacent said condenser lens and receiving said light beams, said outer lens including an inside surface having a plurality of angularly displaced surfaces arranged consecutively, each of said angularly displaced surfaces being tilted at an angle more than 90 degrees from the horizontal, the tilt of said angularly displaced surfaces gradually increasing in inclination upwardly along the plane of said outer lens; and
shaded means on the outer surface of said outer lens for restricting the radiation of light emitted from said housing.

4,542,449

LIGHTING PANEL WITH OPPOSED 45° CORRUGATIONS

Lorne A. Whitehead, Vancouver, Canada, assignor to Canadian Patents & Development Limited, Ottawa, Canada

Filed Aug. 29, 1983, Ser. No. 527,495
Int. Cl.⁴ F21V *5/02*
U.S. Cl. 362—330 **5 Claims**



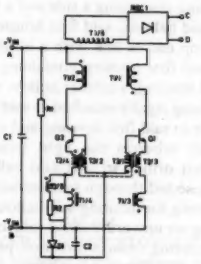
1. A lighting panel having a first face to be positioned to receive light from a source and a second face, comprising:
a first and a second sheet of transparent dielectric material, each sheet having a first smooth surface and a second corrugated surface wherein the surfaces of the corrugations interact at 90° and the surfaces of the corrugations are at 45° to the first smooth surface, the smooth surface of the first sheet forming the first face of the panel and the corrugated surface of the first sheet being of substantially equal size adjacent the smooth surface of the second sheet with the direction of the corrugations on the second sheet being at a predetermined angle α greater than 0° but less than 180° to the direction of the corrugations on the first sheet, whereby distributed light enters the smooth surface of the first sheet and emerges from the corrugated surface of the second sheet.

4,542,450

ELECTRICAL CONVERTER INCLUDING GAIN ENHANCING MEANS FOR LOW GAIN TRANSISTORS

Dahyabhai C. Patel, Reading, United Kingdom, assignor to Astec Europe Limited, Reading, United Kingdom

Filed Jul. 7, 1983, Ser. No. 511,458
Claims priority, application United Kingdom, Jul. 24, 1982, 8221480
Int. Cl.⁴ H02M *3/335*
U.S. Cl. 363—23 **4 Claims**

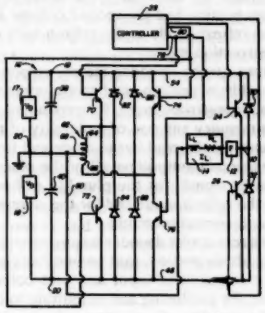


1. An electrical converter for supplying electrical power to a load from a d.c. source comprising:
semi-conductor switching means for converting a direct input current to an alternating current; and
an output transformer means fed with said alternating current for changing the magnitude of an output voltage with respect to an input voltage, wherein the semi-conductor means includes transistor means comprising a pair of transistors connected for mutually exclusive on and off conditions of conduction, each transistor of that pair being connected to a saturable drive transformer in a configuration which provides for switching in response to saturation of the drive transformer which includes at least a portion of primary windings connected respectively in series with the main current emitter collector circuits of the transistors of that pair, and having at least a portion of secondary windings connected to respective control electrodes of the transistors of that pair to provide current feed-back to a drive branch of the circuit connected to a control electrode of said transistor means said current feed-back comprising a means for increasing the response of the transistor means to drive signals derived from the input current and for providing a forced D.C. gain, thereby enabling a lower gain transistor means to be employed for a given minimum input voltage from the source, and wherein a voltage feed-back winding of the output transformer means is connected in the main current circuit of the transistor means in a configuration to provide voltage feed-back in the main current circuit in a sense to curtail the current in said main current circuit.

4,542,451
INVERTER WITH BIDIRECTIONAL INVERTER FOR REGENERATIVE CURRENT

David J. Hucker, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Oct. 7, 1983, Ser. No. 539,936
Int. Cl.[4] H02M 7/537
U.S. Cl. 363—132 13 Claims



1. In an inverter for providing an AC output to a load, the inverter having a DC power supply with positive and negative terminals and an intermediate reference terminal connected to ground, a first capacitor connected between the positive terminal and ground and a second capacitor connected between the negative terminal and ground, means for directing regenerative current flowing to the power supply from the load away from one of said power supply capacitors to transfer charge to the other of said power supply capacitors comprising:

a bidirectional inverter coupled across said DC power supply for providing a first path for regenerative current between the positive terminal and the reference terminal of the power supply and a second path for regenerative current between the negative terminal and the reference terminal of the power supply, said bidirectional inverter being responsive to a greater charge on one of said capacitors than on the other of said capacitors to divert current away from said one capacitor through one of said first or second paths to said reference terminal, current flowing through said one path inducing a current flowing in the other of said paths to transfer charge to said other capacitor.

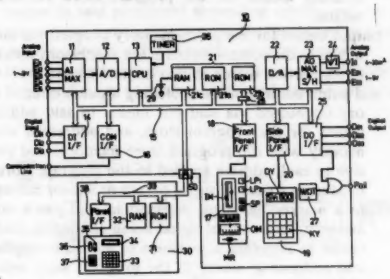
4,542,452
PROGRAMMABLE CONTROLLER

Yoshio Fukai; Masato Yamamoto, and Masuo Hanawaka, all of Tokyo, Japan, assignors to Yokogawa Hokushin Electric Corporation, Tokyo, Japan

Continuation of Ser. No. 275,678, Jun. 22, 1981, abandoned.
This application May 1, 1984, Ser. No. 605,778
Claims priority, application Japan, Jun. 25, 1980, 55-86333; Jun. 25, 1980, 55-86336
Int. Cl.[4] G05B 15/02, 19/02
U.S. Cl. 364—141 8 Claims

1. A programmable controller comprising a controller having a data bus, a microprocessor coupled to said data bus, a first ROM coupled to said data bus for storing a system program, a second ROM coupled to said data bus for storing a user program, a first RAM coupled to said data bus for storing data, said second RAM being removably connected with a socket to said data bus, a display unit having front panels for displaying measured and set value operating outputs, means for specifying the operating mode and means for changing the set value and manual operation of the output,

a programmer removably connected to said controller having a second RAM for storing said user program, a third ROM for storing a control program, a keyboard for use in programming, a programmer display for use in programming, and a changeover switch for changing said programmer from a program mode to a test run mode, whereby said programmer, when connected to said controller, may be switched from a program mode for writing the user program in the second RAM using said keyboard to the test run mode for said controller thereby executing the user program written in said second RAM and checking such execution using said programmer display whereas said controller executes the user program stored in said second ROM when said programmer is disconnected from, said controller,

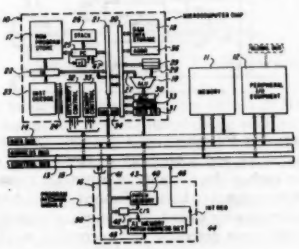


said system program of said controller being provided with a basic function program equivalent to the function performed by a cascade controller having two process controllers connected in series, a selective control function program equivalent to the function performed by a selective type controller having a plurality of process controllers connected in parallel, whereby a control operational function of the controller is determined by selecting a control function program by a command from a user program.

4,542,453
PROGRAM PATCHING IN MICROCOMPUTER

Michael J. Patrick, Houston, Tex., and David M. Snider, Cary, N.C., assignors to Texas Instruments Incorporated and IBM Corp., Dallas, Tex.

Filed Feb. 19, 1982, Ser. No. 350,513
Int. Cl.[4] G06F 9/00, 7/00
U.S. Cl. 364—200 14 Claims



1. A data processing system comprising:

(a) a processor containing an arithmetic logic unit, a program store memory with addressing means, data storage means, and control means including an instruction register receiving instruction words from the program store to

generate commands for defining the operations of the processor;

(b) peripheral input/output circuitry for coupling data between the processor and the peripheral equipment;

(c) bus means connecting terminals of the processor to the peripheral input/output circuitry; and

(d) program patching means coupled to said bus means, which enables online updating of processor program instructions without modifying the program store, comprising:

a patch memory for storage of instruction words, addressing means for the patch memory coupled to said addressing means for the program store via said bus means,

output means for the patch memory coupled via said bus means to the control means in the processor for delivery of instruction words to said control means,

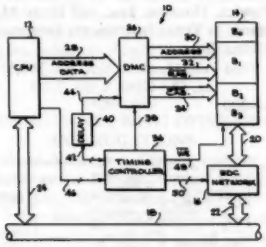
and patch control means including a patch control memory connected via said bus means to said addressing means for the program store, and addressed simultaneously with the program store memory, and responsive to each address applied to the program store, and producing a control signal to said processor in response to a marker bit being detected in said patch control memory, said control signal being applied to said processor to interrupt a sequence of addresses applied by said addressing means to the program store when an address requiring a patch is detected, said processor generating a new address for the patch code when said interrupt occurs.

4,542,454

APPARATUS FOR CONTROLLING ACCESS TO A MEMORY

Joseph A. Brcich, San Jose; Roy J. Levy, Sunnyvale; Jimmy Madewell, San Jose, and N. Bruce Threewitt, Los Gatos, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Mar. 30, 1983, Ser. No. 480,996
Int. Cl.[4] G11C *7/00*
U.S. Cl. 364—200 **5 Claims**



1. A controller for accessing a dynamic memory having a plurality of banks, and a plurality of rows and a plurality of columns for each of the plurality of banks, the memory storing data which are subject to being refreshed and to data bit errors, said controller having a read/write mode, a refresh mode and a refresh with error detection and correction mode, comprising:

(a) a latch for storing first address data for addressing the memory for the read/write mode, the first address data having a first row address portion, a first column address portion and a first bank address portion;

(b) an address counter for generating second address data for addressing the memory for the refresh mode and the refresh with error detection and correction mode, the second address data having a second row address portion, the second column address portion and a second bank address portion;

(c) means for carrying a row address strobe input, a column address strobe input, a mode control input identifying any one said mode and a multiplexer select input;

(d) multiplexer means, responsive to said mode control input and said multiplexer select input, for outputting to the memory the first row address portion and the first column address portion for the read/write mode or the second row address portion and the second column address portion for the refresh mode or the refresh with error detection and correction mode;

(e) row address strobe decoder means, responsive to said first bank address portion, said mode control input and said row address strobe input, for producing and outputting to the memory any one of a plurality of row address strobe signals for the read/write mode and for producing and simultaneously outputting all of the plurality of row address strobe signals for the plurality of banks, respectively, for the refresh mode and for the refresh with error detection and correction mode;

(f) column address strobe decoder means, responsive to said first bank address portion, said second bank address portion, said mode control input and said column address strobe input, for producing and outputting to the memory any one of a plurality of activating column address strobe signals for the read/write mode and the refresh with error detection and correction mode and deactivating the column address strobe signals for the refresh mode; and

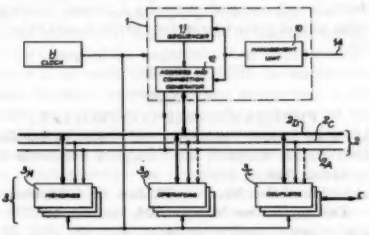
(g) timing means for monitoring the activity of control signals for the dynamic memory and connected to said mode control input for generating mode control signals to said mode control input in response to the activity of the control signals to dynamically select any one said mode.

4,542,455

SIGNAL-PROCESSING MULTIPROCESSOR SYSTEM

Alain Demeure, Paris, France, assignor to Thomson-CSF, Paris, France

Continuation of Ser. No. 151,689, May 20, 1980, abandoned.
This application Aug. 1, 1983, Ser. No. 517,986
Claims priority, application France, May 23, 1979, 79 13199
Int. Cl.[4] G06F *15/16, 9/46*
U.S. Cl. 364—200 **5 Claims**



1. A system for processing signals by means of a finite number of processes, comprising:

means for execution of the processes including plural resources including, plural memories, plural computing operators, and plural input-output couplers, said execution means being at least partly utilized in alternate sequence by a plurality of processes;

first bus means connected to said memories, computing operators and input-output couplers for transfering computing information among said memories, computing operators and input-output couplers; and

means for controlling the execution of the processes including a sequencer and an address and connection generator, said sequencer being connected to said address and con-

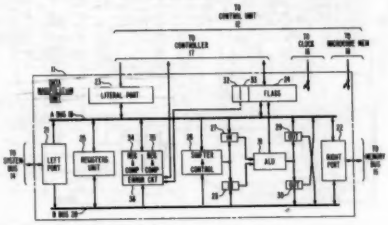
nection generator, said address and connection generator being connected to said first bus means, said sequencer including a finite number of identical modules assigned to the processes in one-to-one correspondence, each module including means for storing requested states and restituted states, respectively indicative of the status of each resource before and after execution of each instruction of a respective process, said modules being connected by a common second bus means, said second bus means comprising a first bus to which are transmitted information indicative of the availability of said execution means, and a second bus to which are transmitted the restituted states of said execution means, and logical means for determining said information indicative of availability of said execution means based on said restituted states at each period of a clock, each of said modules comprising comparison means for comparing its requested states to said information indicative of availability of said executing means, the result of the comparison constituting eligibility data, said controlling means further comprising switch means for selectng one of said modules based on the eligibility data produced in the plural modules, the restituted states of said selected module being transferred onto said second bus.

4,542,456

METHOD AND APPARATUS FOR PERFORMING RANGE CHECKS

Dwight D. Hill, Holmdel, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 28, 1982, Ser. No. 372,482
Int. Cl.⁴ G06F *7/02*
U.S. Cl. 364—200 **30 Claims**



18. A programmable system comprising:

means responsive to execution of a first instruction for enabling the system to check a value against at least one limit of a range of values;

instruction executing means for obtaining the value, by executing in part a second instruction subsequent to execution of the first instruction;

means for comparing the value with the at least one limit during execution of the second instruction; and

means responsive to the comparing means and to the enabling means for generating during execution of the second instruction an indication when the value lies outside of the range and the system is enabled to check the value against a limit of the range.

4,542,457

BURST MODE DATA BLOCK TRANSFER SYSTEM

David J. Mortensen, Mission Viejo, and Jayesh V. Sheth, El Toro, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jan. 11, 1983, Ser. No. 457,178
Int. Cl.⁴ G06F *9/00*
U.S. Cl. 364—200 **8 Claims**

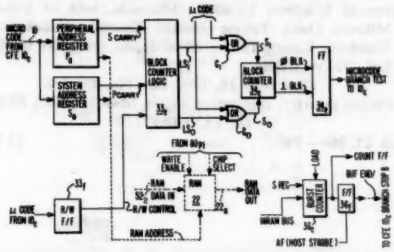
1. A system for minimizing access errors during data transfer operations between a magnetic tape peripheral unit and a main host computer, wherein a peripheral-controller is initiated by instructions from said main host computer to manage data transfer operations between said host computer and said tape peripheral unit, and wherein said peripheral-controller includes a common front end circuit with a microprocessor unit for sequencing microcode instructions and a peripheral dependent circuit unit for interfacing said magnetic tape peripheral unit, the combination comprising:

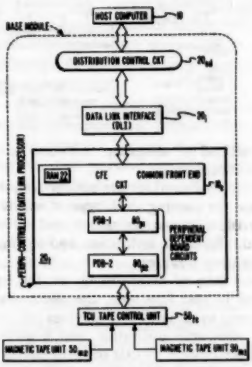
(a) common control circuit means including:

(a1) microprocessor unit means for executing data transfer instructions in accord with commands received from said host computer, and including:

(a1a) sensing means, connected to a memory status logic means in said peripheral dependent circuit unit, to receive status signals representing the number of blocks of data residing in a RAM buffer memory means;

(a1b) means for executing data transfers in a burst mode or a demand mode according to the said status signals, said





burst mode operating to transfer a block of N words per one instruction without interrupting said microprocessor unit means, and said demand mode operating to transfer individual bytes of one word for each instruction from said microprocessor unit means;

(a1c) whereby said access errors are minimized by allocating sufficient time for transferring blocks of N words without interrupting the microprocessor in the burst mode and by allocating sufficient time for transferring individual bytes of a word in the demand mode means for addressing word storage areas of a RAM buffer memory means;

(a2) RAM buffer memory means having data bus connections to said host computer and also to said tape peripheral unit, said memory means including:

(a2a) multiple storage areas, each storage area providing a block of N words;

(b) said peripheral dependent circuit unit connected to said common control circuit means and including:

(b1) said memory status logic means for receiving address data to count words entering or leaving said RAM buffer memory means and including:

(b1a) count logic means to maintain a count of the number of data blocks residing in said RAM buffer memory means, said count logic means providing a memory status signal to said microprocessor unit sensing means;

(c) and wherein said microprocessor unit means will initiate burst mode data transfer operations from said RAM buffer memory means to said host computer only when at least B_x full data blocks reside in said RAM buffer memory means awaiting transfer to said host computer, where B_x is an integer equal to 2 or greater.

4,542,458

METHOD OF AND APPARATUS FOR ASSIGNING SOFTWARE RESOURCES TO MEMORY DEVICES

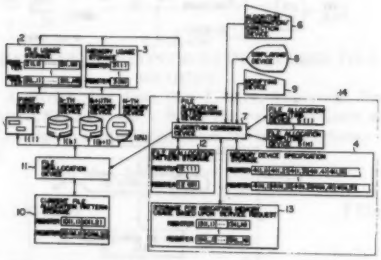
Hiroyuki Kitajima; Kazuhiko Ohmachi, both of Yokohama; Mitsuru Doki, Tokyo; Junichi Kazama, Yokohama, and Hidekazu Kanao, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 18, 1983, Ser. No. 495,594

Claims priority, application Japan, May 21, 1982, 57-84797

Int. Cl.⁴ G06F *1/00*

U.S. Cl. 364—200 **12 Claims**



1. A method of assigning software resources to memory devices comprising:

a first step of storing the access frequency to a memory device for causing each type of service request to utilize each of software resources, and storing the processing speed, allowable utilization and storage capacity of each of memory devices;

a second step of determining, on the basis of information stored in said first step, the allocation of each software resource to said memory devices while being restricted by said allowable utilization and storage capacity of each memory device, so that the processing speed of a memory device, to which a software resource is allocated, is high as the access frequency of said software resource is higher, to minimize a total time taken to access said memory devices; and

a third step of carrying out the assignment of said software resources to said memory devices on the basis of the results obtained in said second step.

4,542,459

MATCHED FILTER FOR X-RAY HYBRID SUBTRACTION

Stephen J. Riederer, Wauwatosa, Wis., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 26, 1982, Ser. No. 444,953

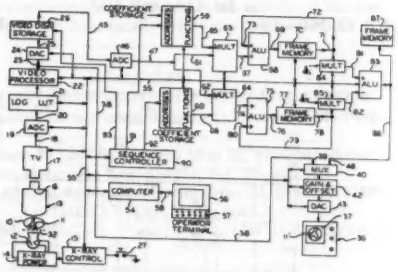
Int. Cl.⁴ G06F *15/42*

U.S. Cl. 364—414 **43 Claims**

1. A method of imaging a blood vessel in a body where the period before a bolus of x-ray contrast medium arrives in the vessel is designated the pre-contrast period, the period during which contrast medium is flowing through the vessel is designated the post-contrast period and the period following the latter when the medium has left the vessel is designated the after-post-contrast period, and where an x-ray source, when energized, projects a beam through said body to produce x-ray images, and including means operative to produce data representative of the respective images, the method including the following steps:

initializing a sequence of pairs of low and high x-ray energy exposures of the blood vessel during the pre-contrast period and continuing the exposures at least into the post-contrast and optionally into the after post-contrast periods to thereby provide data representative of the respective images resulting from the exposures, the data representative of an image in a pair resulting from one pre-contrast exposure at said low x-ray energy being designated the low energy mask image data and the data representative of an image resulting from one pre-contrast exposure in said pair at said high x-ray energy being designated the high energy mask image data,

after the low and high energy mask image data are acquired perform temporal subtraction constituting subtracting the low energy mask image data from the data for each of the ensuing low energy images and send the resulting series of low energy temporal difference images data to storage as they are produced and alternately subtracting the high energy mask image data from the data for each of the



ensuing high energy images and send the resulting series of high energy temporal difference images data to storage as they are produced, said temporal subtraction causing data representative of structure that remains constant throughout the sequence of images to be cancelled and data representative of said contrast medium and data representative of structure that changes during said sequence remain,

access from storage the low energy temporal difference images data in succession and the high energy temporal difference images data in succession and multiply said successive low energy temporal difference images data by matched filter coefficients, respectively, and multiply said successive high energy temporal images data by said matched filter coefficients, respectively,

said matched filter coefficients by which said images data are multiplied being proportional to the projected intensity, (h), of the x-ray contrast medium at times (t) and registered in time with the post-contrast temporal difference images so that a selected one of the coefficients is applied to the corresponding post-contrast temporal difference image containing maximum contrast medium, and the coefficients applied to the pre-contrast temporal difference images and any after-post-contrast temporal difference images are selected so that the sum of all of the coefficients equals zero,

multiply said low energy temporal difference images data by

their respective matched filter coefficients and sum the results and multiply said high energy temporal difference images data by said coefficients, respectively, to thereby produce one set of data representative of a matched filtered low energy temporal difference image and another set of data representative of a matched filtered high energy temporal difference image,

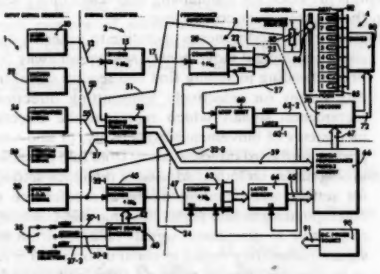
multiply said one low energy temporal difference image data set by a constant (k_L) and said other high energy temporal image data set by a constant (k_H), said constants being so chosen that when said sets of multiplied image data are subtracted data representative of motion of a specific material are substantially cancelled, and

after the preceding multiplications, subtracting the resulting sets of data to yield a set of data representative of the image of the contrast medium in said blood vessel.

4,542,460
DRIVING AID INDICATOR FOR ECONOMICAL OPERATION OF AUTOMATIC TRANSMISSION EQUIPPED MOTOR VEHICLE

Harold J. Weber, 20 Whitney Dr. P.O. Box 315, Sherborn, Mass. 01770

Filed Feb. 16, 1982, Ser. No. 348,775
Int. Cl.⁴ B60K *41/18*; G07C *5/08*; G09B *19/16*
U.S. Cl. 364—424 **24 Claims**



2. Driving aid apparatus, adapted for use with a motor vehicle and comprising.

a. torque converter means;

b. engine means coupled with an input member of said converter means;

c. load means coupled with an output member of said converter means;

d. first sensor means coupled with the input member of said torque converter means, effective to produce a first speed signal proportional to the rotational speed of said input member;

e. second sensor means coupled with the output member of said torque converter means, effective to produce a second speed signal proportional to the rotational speed of said output member;

f. combining means coupled with said first sensor means and said second sensor means effective to produce a slip signal proportional to the effective difference between the first speed signal and the second speed signal;

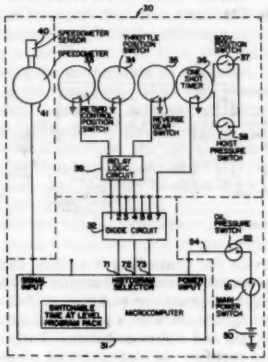
g. memory means coupled with said slip signal effective to produce at an output therefrom a relative torque signal value effectively weighted by a value stored in the memory means; and,

h. telltale guidance means effectively coupled with said relative torque signal produced from said memory means output.

4,542,461
APPARATUS FOR ACQUIRING DUMP TRUCK DUTY CYCLE DATA

Joseph L. Fridridge, Libertyville, and E. A. Domes, Carpentersville, both of Ill., assignors to Payhauler Corporation, Batavia, Ill.

Filed Jun. 14, 1982, Ser. No. 388,007
Int. Cl.⁴ G06F *15/20*
U.S. Cl. 364—424 **1 Claim**



1. An apparatus for use in combination with a dump truck having a frame, an elevatable dump body on the frame and a hydraulic hoist therefor, an engine having a throttle, a retarder, and a transmission having a reverse gear, to acquire as duty cycle data a measurement of the use of system components such as the drive train usage, retarder usage, reverse gear and dump cycle usage, from said truck comprising:

ground speed sensing means associated with said truck and having an output signal;

a plurality of sensing switches associated respectively with said engine throttle, retarder, and transmission reverse gear and producing separate output signals in the full throttle, retarder-on, and reverse-gear-on positions respectively and no signal in the part throttle, no retarder, and forward positions respectively;

a hoist pressure switch for sensing pressure in said hydraulic hoist corresponding to a loaded dump body;

a body position switch closed when said dump body is elevated from said frame;

a one-shot timer switch, having an actuating circuit containing said body position switch and said hoist pressure switch in series such that said one shot-timer is activated only when a loaded dump body is raised from said frame;

a microcomputer having an inner for receiving said ground speed signal, and inputs for each of said engine throttle, retarder, transmission and one-shot timer switches, said microcomputer being programmed to measure the time interval that said ground speed signal is within each of a plurality of finite increments corresponding to the speed range of said truck, said microcomputer further having a plurality of data memories and internal switching means responsive to the presence or absence of a signal from any of said engine, retarder, and transmission switches, and from said one-shot timer for selectively recording said time interval in each of said finite increments in a specific one of said data memories depending on a signal produced by a combination of said switches whereby each of said memories contains a histogram containing the total elapsed time of each speed increment for a given mode of operation of said truck.

4,542,462
DEVICE FOR CONTROLLING A VEHICLE CHARGING SYSTEM

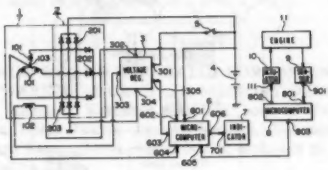
Mitsuharu Morishita, and Shinichi Kouge, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 13, 1983, Ser. No. 484,673

Claims priority, application Japan, Apr. 13, 1982, 57-63021; Jun. 19, 1982, 57-106405; Jun. 19, 1982, 57-106408; Jun. 19, 1982, 57-106412; Jun. 19, 1982, 57-106414

Int. Cl.[4] G06F *15/20;* H02J *7/32*

U.S. Cl. 364—424 **8 Claims**



1. In a device for controlling a vehicle charging system including a generator driven by an engine, a voltage regulator for controlling said generator to bring an AC output of the generator into agreement with a prescribed value based on a reference voltage, and a storage battery chargeable by a DC output from a rectifier, the improvement comprising sensor means for detecting engine information, an engine control microcomputor responsive to an information signal from said sensor for effecting an arithmetic operation on the information signal to issue a control signal for providing optimum operating conditions of the engine, a charging system control microcomputer for reading an output signal from said engine control microcomputer and signals indicative of conditions at a plurality of positions in said charging system, for effecting prescribed arithmetic operations on the signals thus read to effect optimum control to optimize said reference voltage used for controlling said AC output.

4,542,463
GROUP SUPERVISORY CONTROL SYSTEM FOR ELEVATOR

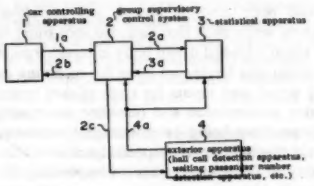
Kenichi Uetani, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 16, 1982, Ser. No. 450,385

Claims priority, application Japan, Dec. 28, 1981, 56-211346

Int. Cl.[4] B66B *1/18*

U.S. Cl. 364—424 **4 Claims**



1. A group supervisory control system for an elevator in which a day is divided by a plurality of time zones, and in which traffic and service data for an elevator are statistically gathered for each time zone in the past time and the driving of cars are controlled based on the statistical data, said control system comprising:

traffic data recording circuit for recording the traffic data of the elevator for a plurality of time zones;

reference setting means for determining a reference value;

time zone setting device responsive to said traffic data recorded by said traffic data recording circuit and said reference value wherein said time zone setting device includes a comparator for comparing said recorded traffic data and said reference value and wherein said time zone setting device outputs a signal for setting a new plurality of time zones.

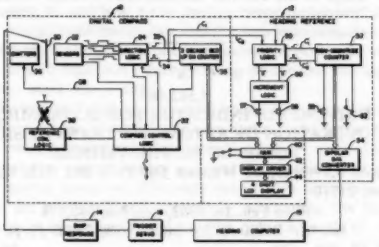
4,542,464
AUTOPILOT SYSTEM

Melvin G. Kramer, Riverton, Wyo., assignor to The Brunton Company, Riverton, Wyo.

Filed Aug. 6, 1982, Ser. No. 405,986

Int. Cl.[4] G06F *15/50;* G05D *1/08*

U.S. Cl. 364—457 **14 Claims**



1. In apparatus for steering a vessel wherein steering control means is provided for maintaining said vessel on a preset heading, the improvement comprising:

incremental encoder means operative to generate signals for each incremental movement of said vessel away from said preset heading including first and second signal-transmitting means for selectively transmitting directional and incremental signals which represent the direction and increments of movement, respectively, of said vessel in a port or starboard direction away from said preset heading;

counting means including adjustable reference setting means for setting said counting means at a reference position corresponding to said preset heading, said counting means responsive to directional signals received from said first signal-transmitting means to count up or down in response to incremental signals received from said second signal-transmitting means; reference position sensing means operative in response to an incremental signal received after an incremental signal causing said counting means to reach its reference position to reverse the count sequence of said counting means; and

means producing a correction signal in response to said directional and incremental signals received by said counting means whereby to cause said steering control means to return said vessel to its preset heading.

4,542,465
METHOD OF PRODUCING A CONTROLLED NUMBER OF AUTHORIZATION MEMBERS

Hermann Stockburger, Kirnachweg 7, D-7742 St. Georgen, and Hans-Georg Winderlich, Niedere Strasse 36, D-7730 VS-Villingen, both of Fed. Rep. of Germany

PCT No. PCT/EP81/00173, § 371 Date Jun. 21, 1982, § 102(e) Date Jun. 21, 1982, PCT Pub. No. WO82/01610, PCT Pub. Date May 13, 1982

PCT Filed Oct. 30, 1981, Ser. No. 394,917

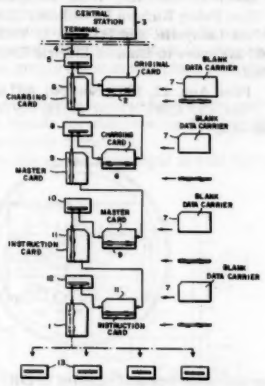
Claims priority, application Fed. Rep. of Germany, Nov. 3, 1980, 3041393

Int. Cl.[4] G11B *25/04;* G06F *15/46*

U.S. Cl. 364—468 **7 Claims**

1. A method of producing a controlled number of authorization members from blank data carriers having a storage me-

dium for storing data comprising the steps of supplying enabling data indicating an authorization to produce said authorization members to a first activating station, whereby said first activating station is enabled to produce a charging member from a blank data carrier, which member has stored thereon first data characterizing the specific data carrier and second data defining the scope of authorization to produce said number of authorization members, supplying said charging member to a second activating station, whereby said second activating station is enabled by said first and second data to produce a predetermined number of authorization members and said second data is reduced by a number corresponding to the predetermined number of authorization members produced by said second activating station.

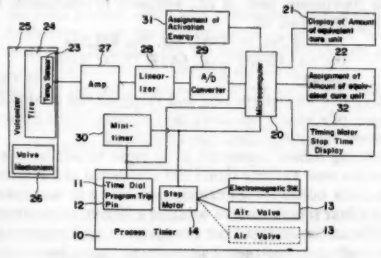


4,542,466

METHOD FOR CONTROLLING THE STATE OF VULCANIZATION OF WHEEL TIRES AND APPARATUS THEREFOR

Toshio Arimatsu, Akashi, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

Continuation of Ser. No. 370,823, Apr. 22, 1982, abandoned. This application Sep. 18, 1984, Ser. No. 652,158
Claims priority, application Japan, Apr. 28, 1981, 56-64759
Int. Cl.⁴ B29H *5/02, 5/24;* **G05B** *15/02;* **G05D** *21/02*
U.S. Cl. 364—473 **10 Claims**



1. A method for controlling the state of vulcanization of a wheel tire including the steps of shaping, heating, cooling, exhausting and applying vacuum, which comprises:

a first control step of controlling the process steps of the vulcanizing process preceding the heating step according to a time mode, using a process timer;

a second control step of controlling only the heating step according to an equivalent cure unit control mode, said second control step being carried out by,

(a) measuring the temperature of the tire or a tire forming mold by the use of a temperature sensor,

(b) calculating the actual equivalent cure amount by the use of a computer according to the Arrhenius' equation or its equivalent coefficient formula

$$U = C^{\frac{T-To}{Y}} \cdot dt$$

wherein C is the equivalent cure amount, T is the current cure temperature, To is the reference cure temperature, Y is a coefficient and U is the vulcanization amount, using the temperature so measured,

(c) comparing the actual equivalent cure amount with a predetermined equivalent cure amount thereof at the time a signal indicative of the termination of the preset time required to perform the heating step has been received, said temperature measurement being initiated simultaneously with the start of either the vulcanizing process or the heating step, and

(d) terminating said heating step when the actual equivalent cure amount becomes equal to the predetermined amount; and

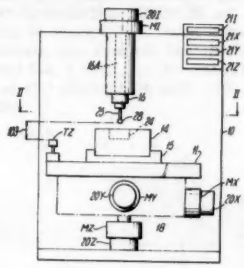
a third control step of controlling the process steps subsequent to the heating step according to a time mode by the use of the process timer.

4,542,467

METHOD OF OPERATING A MACHINE TOOL WITH A SENSING PROBE IN ORDER TO GATHER POSITIONAL DATA FOR THE CALCULATION OF TOOL OFFSET PARAMETERS

David R. McMurtry, Wotton-under-Edge, England, assignor to Renishaw Electrical Limited, Wotton-under-Edge, England

Filed Sep. 16, 1982, Ser. No. 421,491
Int. Cl.⁴ G06F *15/46*
U.S. Cl. 364—474 **1 Claim**



1. The method of operating a machine tool of the kind comprising a tool spindle having an axis of rotation, means for rotating the spindle through predetermined angles of rotation, a table movable relative to the spindle transversely to said axis, a surface-sensing probe mounted on the spindle, means for generating a probe signal at the instant of said probe being brought into a sensing relationship with a surface defined on said table, means responsive to the occurrence of a said probe signal for producing an output corresponding to the position of said axis relative to a primary datum which is fixed in relation to the table, and a computer connected to read said output; the method comprising:

(a) providing on the table a first and a second test surface having therebetween a mid-point defining a secondary datum, said mid-point having an actual position (CA) which may differ from a demanded position (CN), stored in the computer, by an error (WO);

(b) operating the machine to bring the probe into sensing relationship with the first test surface and produce a first corresponding said output (A1);
(c) operating the machine to rotate the spindle through 180°;
(d) operating the machine to bring the probe into sensing relationship with the second test surface and produce a second said corresponding output (A2);
(e) operating the machine to again bring the probe into sensing relationship with the first test surface, without having rotated said spindle after step (d) above and produce a third said corresponding output (B); and
(f) operating the computer to read said outputs and determine the following values:

$$WO = CN - (A1 + A2)/2$$

$$PO1 = (F - (A2 - A1)/2,$$

and

$$PO2 = A2 + PO1 - F - B$$

wherein
WO = said error,
PO1 = the distance between said spindle axis and the second test surface at the instant of said first output,
PO2 = the distance between said spindle axis and the first test surface at the instant of said second output,
F = the known distance between the first and second test surfaces,
and the position A2 is further from said primary datum than the position A1 and B.

4,542,468

GROUND DETECTION ARRANGEMENT FOR AN A.C. GENERATOR

Ryosuke Taniguti, Nagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Aug. 4, 1982, Ser. No. 405,283
Claims priority, application Japan, Aug. 7, 1981, 56-124883
Int. Cl.⁴ G06G *7/62;* **G08B** *21/00*
U.S. Cl. 364—481 **3 Claims**

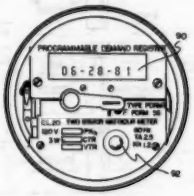
1. A ground detection arrangement for an A.C. generator comprising:
a high resistance element (R_i) connected to a neutral point of an armature winding of an A.C. generator;
a D.C. voltage source of positive and negative D.C. voltages applied alternately to the neutral point of said armature winding through said high resistance element (R_i);
a detecting resistor connected between said D.C. voltage source and the ground of the circuit arrangement; and
an arithmetic controller including means for calculating an average voltage value of a sum of absolute values of D.C. voltage values of positive and negative polarities developed across said detecting resistor and for comparing the average voltage value with a reference voltage value, thereby to detect existence of grounding in the field winding of the A.C. generator.

4,542,469

PROGRAMMABLE DEMAND REGISTER WITH TWO WAY COMMUNICATION THROUGH AN OPTICAL PORT AND EXTERNAL READING DEVICES ASSOCIATED THEREWITH

Robert E. Brandyberry; Mark M. Forbes, both of Lafayette; David D. Gloyeski, Battle Ground; Russell F. Greafnitz, Lafayette; Glen R. Phillips, West Lafayette; Robert L. Straw, Linden; Kevin L. Stricker, West Lafayette; William A. Szabela, West Point; Richard R. Webeck; Glenn A. Mayfield, both of West Lafayette, and William L. Vollmer, Lafayette, all of Ind., assignors to Duncan Electric Company, Inc., Lafayette, Ind.

Filed Aug. 12, 1982, Ser. No. 407,608
Int. Cl.⁴ G06F *15/20;* **G01R** *19/165*
U.S. Cl. 364—483 **23 Claims**



1. A programmable demand register (PDR) for registering AC electric energy consumption by a load comprising:
energy flow pick-up means;
optical scanning means including light emitting and light receiving sources, completion of light transmission therebetween being periodically interrupted by said energy flow pick-up means;
a transducer responsive to the transmit-non transmit mode of said optical scanner means to produce a binary code output which is directly related to electric energy consumption and which is stored in a first memory;
clock means producing real time data;
a second memory containing program control data;
bidirectional optical communciation port means,
PDR data output means whereby, upon receipt of a signal, the data stored in said first memory is transmitted to a receiver external of the PDR; and
PDR data input means whereby the meter memories may, upon receipt of a proper password signal, be actuated.

4,542,470

FREQUENCY DETERMINING AND LOCK-ON SYSTEM

William L. Mohan, Barrington Hills, and Samuel P. Willits, Lake Barrington, both of Ill., assignors to Spartanics, Ltd., Rolling Meadows, Ill.

Filed Jul. 16, 1984, Ser. No. 631,334
Int. Cl.⁴ G06M *9/00;* **G01R** *23/00, 29/00*
U.S. Cl. 364—485 **19 Claims**

1. A system for determining and verifying the predominant frequency of a unique unknown time varying signal occurring in a known frequency spectrum comprising
generating means connected at its input to said unique unknown time varying signal and connected and responsive to clock pulses for selectively generating in succession at least four signals each of which is a filtered reconstruction of the unknown signal but time delayed with respect to the preceding reconstructed signal by the same known increment,
clock means connected at its output to said generating means and adapted to provide output pulses at a frequency determined by a control signal at its input,
variable control signal generating means connected at its output to an input of said clock means to vary the frequency of said clock pulses and thereby said known time delay over a time interval whose period corresponds to

the minimum and maximum period of said known frequency spectrum,

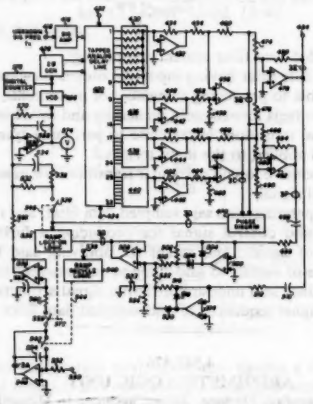
first summing means connected at its input to said generating means for differentially summing the first two of said successive reconstructed signals to thereby form a first composite signal,

second summing means connected at its input to said generating means for differentially summing the second two of said successive reconstructed signals to thereby form a second composite signal,

phase demodulator means connected at its input to said first and said second composite signals to generate an output error signal proportional to any phase difference therebetween,

first means connected at its input to said first and said second composite signals for determining the amplitude of the sum of the signals therefrom,

second means connected at its input to said first and second



composite signals for determining the amplitude of the difference of the signals therefrom,

validation signal generating means connected at its input to the output of said first and said second means for comparing the amplitude of said sum and difference signals to generate a validation signal when the summed signal is larger,

logic means connected at its inputs to said validation signal generating means and said phase demodulator means and at its output to said variable control signal generating means for holding the variable control signal constant at the level present when said validation signal is generated to thereby cause the control signal to remain at the fixed level that identifies the predominant frequency of said unique unknown time varying signal, and

means for summing said output error signal and said fixed level control signal to thereby correct for any error in said clock output pulse frequency to make it an exact multiple of said unique unknown time varying signal.

4,542,471

ROBOT CONTROL SYSTEM FOR PRESETTING LIMIT VALUES CORRESPONDING TO LIMITS OF DEVIATION

Hajimu Inaba, and Hideo Miyashita, both of Hino, Japan, assignors to Fanuc Ltd., Tokyo, Japan

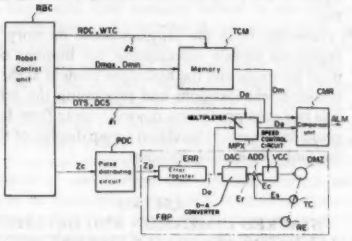
Filed Dec. 28, 1981, Ser. No. 334,925
Claims priority, application Japan, Dec. 30, 1980, 55-186750
Int. Cl.[3] **G05B** *19/23*
U.S. Cl. 364—513 **4 Claims**

1. A method for controlling a robot of the type in which a deviation between a number of command pulses generated in accordance with predetermined instructive data stored in a memory and a number of feedback pulses generated in accordance with the movement of the robot, is stored in an error register and the robot is driven in such a manner that the deviation approaches zero, said method comprising the steps of:

presetting limit values corresponding to limits of the deviation by-

operating the robot on the basis of the predetermined instructive data;

reading said deviation out of the error register while the robot is operating in accordance with the predetermined instructive data;



computing the limit values using said deviation read out of the error register;

storing said limit values in the memory;

reading a deviation check instruction included in said predetermined instructive data, during operation of the robot;

comparing, in accordance with said deviation check instruction, said deviation with the limit values; and

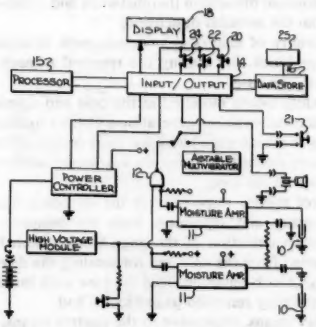
halting the operation of the robot when said deviation is outside the range of said limit values, such condition being interpreted as an overload.

4,542,472

METHODS AND APPARATUS FOR SURVEYING ROOF MOISTURE CONTENT

Thomas M. Toms, II, Raleigh, N.C., assignor to Troxler Electronic Laboratories, Inc., Research Triangle Park, N.C.

Filed Feb. 5, 1982, Ser. No. 346,171
Int. Cl.[4] **G01N** *22/04*; **G01T** *3/00*
U.S. Cl. 364—556 **13 Claims**



8. A method of mapping moisture in a roof with the use of a thermal neutron moisture gauge having a programmable memory device, said method comprising the steps of:

(a) subdividing the roof area to be mapped into an array consisting of a plurality of measurement locations,

(b) storing in the programmable memory device a signal

representative of the number of measurement locations in the array,

(c) placing the thermal neutron moisture gauge at a first predetermined location within said array on the roof,

(d) generating a signal representative of the hydrogen content of the roof at that location and registering the signal in a programmable memory device,

(e) successively displaying to the operator the coordinates of the next measurement locations within said array on the roof and at each such successive location repeating the steps of generating a signal representative of the hydrogen content of the roof at that location and registering the signal in the programmable memory device, and thereafter

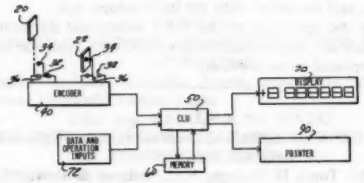
(f) retrieving from the programmable memory device the registered signals representing the number of measurement locations and the hydrogen content at the respective measurement locations and processing the retrieved signals in a data processing device remote from the moisture gauge to generate therefrom a map display of the roof and the moisture at each location.

4,542,473

STACKED DIMENSION AND DEVIATION CALCULATOR APPARATUS FOR USE WITH GAGE BLOCKS

Donald H. Bailey, Bloomfield Hills, Mich., assignor to Suburban Tool, Inc., Birmingham, Mich.

Filed Sep. 29, 1982, Ser. No. 427,859
Int. Cl.[4] G01B 5/06; G06F 15/00
U.S. Cl. 364—560 **8 Claims**



8. A gage block set comprising:

a case;

a plurality of gage blocks removably mounted within the case, each gage block having opposed gage surfaces with a nominal dimension therebetween and a known deviation from the nominal dimension;

a plurality of electrical switches, each mounted with one gage block, for sensing the removal of each gage block from the case;

encoding means mounted in the case and responsive to the electrical switches generating a distinct signal corresponding to which gage block has been removed from the case;

memory means for storing the known deviation of each gage block in the case;

control means, responsive to the encoding means, for addressing and obtaining from the memory means the known deviation of the gage block which has been removed from the case and for totaling the deviation of the gage block removed from the case with the deviations of previously removed gage blocks; and

display means, responsive to the control means, for displaying the total deviation of all of the gage blocks which have been removed from the case.

4,542,474

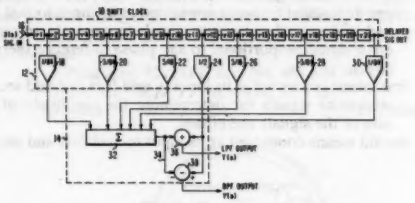
Patent Not Issued For This Number

4,542,475

SAMPLED DATA FILTER SYSTEM AS FOR A DIGITAL TV

Alfonse Acampora, Staten Island, N.Y., assignor to RCA Corporation, Princeton, N.J.

Filed Nov. 23, 1982, Ser. No. 443,928
Int. Cl.[4] G06F 7/38; H04N 5/14
U.S. Cl. 364—724 **10 Claims**



1. A sampled data filter system comprising:

a sampled data filter having input and output terminals, and susceptible to producing sequences of undesirable output signal artifacts immediately preceding and following output signal transitions in response to particular transitions of signal applied to the input terminal.

means responsive to said particular transitions for generating a control signal;

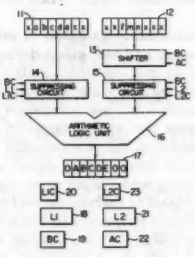
means cooperating with said sampled data filter, and responsive to said control signal for producing a further sequence of signals; and means for applying said further sequence of signals to said filter to successively substantially reduce said undesirable output signal artifacts in the output signal sequences of said sampled data filter.

4,542,476

ARITHMETIC LOGIC UNIT

Motonobu Nagafuji, Hadano, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 3, 1982, Ser. No. 404,648
Claims priority, application Japan, Aug. 7, 1981, 56-122984
Int. Cl.[4] G06F 7/38
U.S. Cl. 364—749 **6 Claims**



1. An arithmetic logic unit comprising:

(a) data supplying means for supplying multi-byte depth data including first and second operands, respectively;

(b) suppressing means for suppressing bytes other than operand bytes of the data supplied from said supplying means, said suppressing means including means for suppressing all of the multi-bytes of one of said operands when said one operand has been exhausted;

(c) arithmetic logic means for simultaneously processing the multi-byte depth data supplied from said suppressing means; and

(d) means responsive to an operation of said arithmetic logic

means for updating an operand length specified by an instruction for each multi-byte depth processing operation to produce a signal indicating whether the operand has been exhausted or not in accordance with the updated operand length, said signal being supplied to said suppressing means, wherein said means for producing the signal indicating whether the operand has been exhausted or not responds to the change of said updated operand length to a negative value.

4,542,477

INFORMATION RETRIEVAL DEVICE

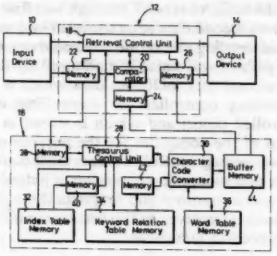
Masato Noyori; Hiroyoshi Saitou; Masamitsu Sato, and Kiyoshi Kikuchi, all of Kawasaki, Japan, assignors to The President of the Agency of Industrial Science & Technology, Tokyo, Japan

Continuation of Ser. No. 250,020, Apr. 1, 1981, abandoned. This application Feb. 15, 1984, Ser. No. 579,756

Claims priority, application Japan, May 30, 1980, 55-71517

Int. Cl.⁴ G06F *15/02, 15/40*

U.S. Cl. 364—900 **1 Claim**



1. An information retrieval system having a thesaurus displaying function and comprising a thesaurus section in which information is stored and from which information is to be retrieved and an operating section for effecting the retrieval, said operating section comprising input means forming part of the system for providing a character coded input keyword which determines the information to be retrieved from the thesaurus section, said input means also providing control instructions, a retrieval control means responsive to said control instructions provided by the input means for in turn providing control instructions for controlling the operation of said thesaurus section, and output means for displaying the retrieved information;

said thesaurus section including a word table memory having stored therein a predetermined thesaurus of information in character code and in corresponding numerical code;

a keyword relation table memory containing reference symbols comprising numerical codings of potential and anticipated keywords, each related to specific information in the thesaurus, said numerically coded keywords in the keyword relation table memory comprising identification keywords and relation keywords related to said identification keywords, said identification keywords being formed into groups, identification keywords of each group respectively having identical heading characters, identical heading characters in one group being different from identical heading characters of other groups;

an index table memory having stored therein a start address of the first identification keywords of each group in said keyword relation table memory and an end address of the last keyword of said group;

said thesaurus section further including a thesaurus control unit, said control unit reading out a group of said start addresses and said end addresses having heading characters identical to that of the character code of the input keyword from said index table memory in response to said control instructions from the retrieval control means as a function of the character code of the input keyword, said control unit generating sequentially addresses between said start and end addresses, which are then transferred to the keyword relation table memory to retrieve therefrom the numerically coded identification keywords, said unit causing said keyword relation table memory to supply the retrieved numerically coded identification keywords to a character code converter which is operatively connected to said word table memory for operatively supplying to said output means, on command of said retrieval control means, the character codes in said word table memory corresponding to the retrieved numerically coded identification keywords, first memory means in the operating section of the system for storing the character code information of the input keyboard, second memory means also in the operating section of the system for receiving and storing the character code information from the character code converter, comparator means in the operating section for comparing the information stored in said first and second memory means under control of an instruction signal from said retrieval control means until identity is established at which time the retrieval control means instructs the thesaurus control unit to retrieve those relation keywords in said keyword relation table memory which are related to the identification keyword corresponding to the input keyword and to display the relation keywords on the output means.

4,542,478

ELECTRONIC DICTIONARY AND LANGUAGE INTERPRETER OF SEARCHING AND INDICATING A PART OF SPEECH AND OTHER INDEX INFORMATION OF A SPECIFIC WORD

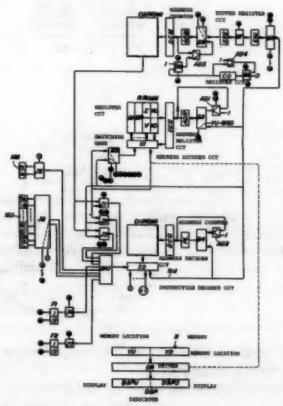
Shintaro Hashimoto, Ikoma, and Akira Tanimoto, Kashihara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 104,830, Dec. 18, 1979,. This application Jun. 21, 1982, Ser. No. 390,699

Claims priority, application Japan, Dec. 19, 1978, 53-165454

Int. Cl.⁴ G06F *7/00*

U.S. Cl. 364—900 **7 Claims**



1. An electronic dictionary and language translator comprising:

memory means for storing character information related to a plurality of words in a first language and a like plurality of groups of translated words in a second language, each group corresponding to a separate one of the individual words in said first language and containing translated

words each of which is a different translation of the corresponding one of the individual words in the first language, at least a portion of the groups including at least two translated words in said second language, said memory means further storing predetermined symbols for identifying the part of speech of each of the respective forms translated words in each of said groups in said second language;

input means for entering character information related to a selected individual word in said first language;

address means responsive to the input means for addressing the memory means to identify the address in said memory means at which said selected individual word is stored;

translator means responsive to said address means for retrieving from said memory means said group of translated words in said second language corresponding to said selected individual word and said predetermined parts of speech symbols for each of said words in said second language that are retrieved; and

means responsive to said translator means for simultaneously displaying said selected individual word, said corresponding group of translated words and the respective predetermined parts of speech symbols for each of said translated words in said group of words in said second language whereby an operator may select an appropriate one of said words from said group.

4,542,479

DISTRIBUTED CONTROL SYSTEM

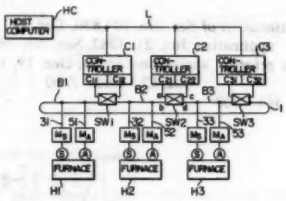
Hiroshi Kamimura, and Tetsuo Ito, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

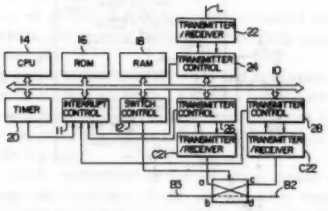
Filed Apr. 14, 1982, Ser. No. 368,046

Claims priority, application Japan, Apr. 20, 1981, 56-58498

Int. Cl.[4] G06F *9/00*

U.S. Cl. 364—900 **5 Claims**





1. A distributed control system for controlling a plurality of controlled objects, comprising:

at least one transmission path divided into a plurality of sections to which said plurality of controlled objects are respectively connected;

a plurality of controllers connected in cascade by the sections of said transmission path so that each controller is allocated to normally control an associated one of said controlled objects and to monitor the status of at least one of the other controllers normally connected thereto by one of said transmission path sections, each controller comprising:

(a) first and second transmitter/receivers;

(b) memory means having a capacity for storing data used for controlling at least two of said controlled objects;

(c) switching means selectively operable in a first mode for connecting said first transmitter/receiver to one section of said transmission path to which the associated controlled object is connected and for connecting said second transmitter/receiver to a preceding section of said transmission path to which a preceding one of said controllers allocated to monitor the controller is connected or in a second mode for disconnecting said first and second transmitter/receivers from said one and preceding sections of said transmission path and for connecting said one and preceding sections to each other to bypass the controller on said transmission path;

(d) switch control means for controlling said switching means to operate in said first mode when the controller is in a normal condition and in said second mode when the controller is in an abnormal condition; and

(e) control means operating when said switching means operates in said first mode to transmit first data stored in said memory means through said first transmitter/-receiver to the associated controlled object for controlling the same, to receive through said first transmitter/-receiver second data to be stored in said memory means of a succeeding one of the controllers on said transmission path whose status is monitored by the controller, said second data including data which is used by said succeeding controller for controlling its associated controlled object and which is stored in the memory means of the controller for the purpose of controlling the succeeding controller's associated controlled object when said succeeding controller is judged to be abnormal, and to transmit said first data through said second transmitter/receiver to the first transmitter/receiver of the preceding controller.

4,542,480

ELECTRONIC MEMORANDA DEVICE FOR STORING, RETRIEVING, AND DISPLAYING A SCHEDULE OF DATA IN RECORDS

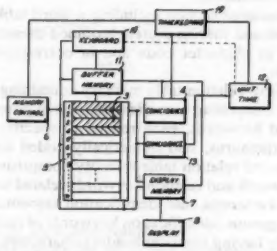
Toshio Orii, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Dec. 7, 1981, Ser. No. 328,347

Claims priority, application Japan, Dec. 9, 1980, 55-173405; Dec. 10, 1980, 55-174163

Int. Cl.[4] G06F *17/06, 15/20*

U.S. Cl. 364—900 **14 Claims**



1. An electronic memoranda device for storing and displaying a schedule of data in records, each of said records including a time data field and an associated event data field, comprising:

memory means for storing said records, said memory means comprising a plurality of memory addresses;

display means for selectively displaying data read from the memory means;

inquiry means for generating a time related inquiry signal, said inquiry signal comprising time data;

first coincidence circuit means coupled to the memory means and inquiry means for comparing a part of the time data field in one record with a part of the inquiry signal, said first coincidence circuit means generating a first output when coincidence is found between the part of the time data field and the part of the inquiry signal;

second coincidence circuit means coupled to the memory means, display means, inquiry means and first coincidence circuit means for comparing the entire time data field in one record with the entire inquiry signal when the first output is received from the first coincidence circuit means, and second coincidence circuit means causing the display means to display said one record when coincidence is found between the time data and the inquiry signal; field and

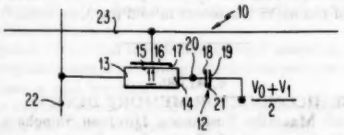
control means for repetitively selecting said time data fields from the memory means for comparison by said first coincidence circuit means upon receipt of said inquiry signal.

4,542,481

ONE-DEVICE RANDOM ACCESS MEMORY CELL HAVING ENHANCED CAPACITANCE

Russell C. Lange, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 31, 1983, Ser. No. 462,646
Int. Cl.⁴ G11C *11/24*
U.S. Cl. 365—149 **8 Claims**



1. A semiconductor memory cell comprising:

a semiconductor substrate of a first conductivity type;

a pair of regions of a second conductivity type defining a channel region of a field effect transistor therebetween;

a first insulating layer on said channel region;

a gate electrode on said first insulating layer;

an impurity region of the second conductivity type connected to one of said pair of regions to form the bottom plate of a diffusion store capacitor, with said bottom plate being at either a first or a second voltage level depending upon the state of said memory cell;

a second insulating layer on said impurity region;

the thickness of said first insulating layer being greater than the thickness of said second insulating layer, and

a conductive plate on said second insulating layer, said conductive plate being connected to a voltage level which is between the first and second voltage levels.

4,542,482

READ ONLY MEMORY

Takehide Shirato, Hiratsuka, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Jun. 11, 1982, Ser. No. 387,558
Claims priority, application Japan, Jun. 30, 1981, 56-102872
Int. Cl.⁴ G11C *11/30*
U.S. Cl. 365—182 **3 Claims**

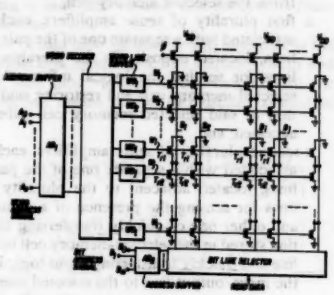
1. A read only memory comprising:

a plurality of bit lines;

a plurality of word lines;

a plurality of FET memory cells each being formed to represent one of two logic states of data, each of said memory cells being coupled individually to one of said word lines and pairs of adjacent memory cells being connected by a common coupling means to one of said bit lines;

said memory cells that represent one of said logic states of data being formed as an offset gate FET which remains nonconductive when a signal is applied through its respective word line, and said memory cells that represent the



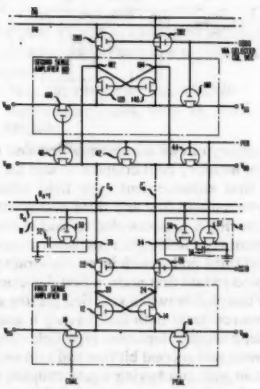
other of said logic states of data each being formed as an enhancement FET which becomes conductive when a signal is applied through its respective word line.

4,542,483

DUAL STAGE SENSE AMPLIFIER FOR DYNAMIC RANDOM ACCESS MEMORY

Frank J. Procyk, Center Valley, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 2, 1983, Ser. No. 557,632
Int. Cl.⁴ G11C *11/40*
U.S. Cl. 365—190 **8 Claims**



1. A random access memory device comprising

an array of memory cells arranged in a plurality of rows and a plurality of columns, each memory cell comprising an information storage device, a row access port and a column access port;

a plurality of row access lines, each row access line coupled to the row access ports of a separate row of memory cells, for selecting a row of memory cells to be accessed by applying a row access signal to one row access line of said plurality of row access lines;

a plurality of column access line pairs, each pair of column access lines coupled to the column access ports of a separate column of memory cells, means for selecting a column of memory cells to be accessed, wherein the intersection of an accessed row and an accessed column pair define a selected memory cell;

a plurality of input/output lines disposed at one end of the random access memory device, each input/output line

couplable to a separate one of the column access lines in each pair of column access lines, for either one of inputing logical information to and outputting logical information from, the selected memory cell;

a first plurality of sense amplifiers, each sense amplifier associated with a separate one of the pair of column access lines, located opposite to the plurality of input/output lines for sensing the logical information stored in the selected memory cell and restoring said logical information in said selected memory cell subsequent to being accessed; and

a second plurality of sense amplifiers, each sense amplifier associated with a separate one of the pair column access lines, located adjacent to the plurality of input/output lines for sensing the presence of a column access signal and either one of quickly transferring the logic information stored in the selected memory cell to the input/output line and quickly transferring input logic information from the input/output line to the selected memory cell.

4,542,484

SENSE AMPLIFIER WITH HIGH SPEED, STABILIZED READ-OUT

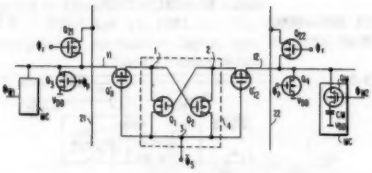
Hiroaki Ikeda, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Aug. 5, 1982, Ser. No. 405,462

Claims priority, application Japan, Aug. 5, 1981, 56-123261

Int. Cl.⁴ G11C *7/00, 11/40*

U.S. Cl. 365—205 **10 Claims**



7. A memory circuit comprising first and second bit lines, a plurality of memory cells coupled to said bit lines, first to third nodes, a first enhancement type field effect transistor connected between said first and third nodes with its source-drain path and having a gate coupled to said second node, a second enhancement type field effect transistor connected betwen said second and third nodes with its source-drain path and having a gate coupled to said first node, a first depletion type field effect transistor coupled between said first bit line and said first node with its source-drain path and having a gate coupled to said third node, a second depletion type field effect transistor coupled between said second bit line and said second node with its source-drain path and having a gate coupled to said third node, and control means for sequentially charging said third node and then discharging said third node.

4,542,485

SEMICONDUCTOR INTEGRATED CIRCUIT

Hiroshi Iwahashi, Yokohama, and Masamichi Asano, Tokyo, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jan. 8, 1982, Ser. No. 337,969

Claims priority, application Japan, Jan. 14, 1981, 56-4323; Apr. 21, 1981, 56-60111; Jun. 12, 1981, 56-90398; Jul. 29, 1981, 56-118749; Jul. 29, 1981, 56-118750

Int. Cl.⁴ G11C *13/00, 11/40*

U.S. Cl. 365—230 **13 Claims**

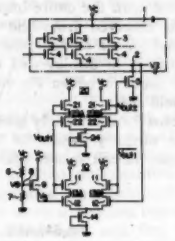
4. A semiconductor memory device comprising

a plurality of column lines;

a plurality of row lines crossing said column lines;

memory cells each including an MOS transistor disposed at cross points of said column lines and said row lines, the drain of each MOS transistor being connected to a corresponding column line; and

means connected between a high potential power source and a low potential power source for applying a signal at a given potential between high and low potentials of said power source to the source of said MOS transistor constituting each memory cell, said signal applying means comprising a transistor circuit including a transistor equivalent to said MOS transistor constituting said memory cell, means for applying a signal, which is at a potential substantially equal to the potential on a non-selected row line, to the gate of said equivalent MOS transistor, and means for fetching an output signal from said equivalent transistor and supplying the output signal to the source-drain path of the MOS transistors in said memory cells.



4,542,486

SEMICONDUCTOR MEMORY DEVICE

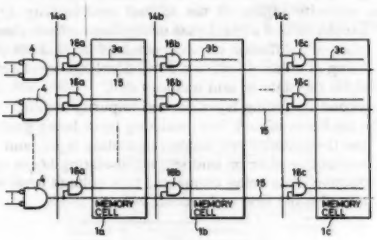
Kenji Anami; Masahiko Yoshimoto; Hirofumi Shinohara, and Osamu Tomisawa, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 2, 1983, Ser. No. 500,608

Claims priority, application Japan, Jun. 2, 1982, 57-95932

Int. Cl.⁴ G11C *11/40*

U.S. Cl. 365—230 **6 Claims**



1. A semiconductor memory device, comprising:

N memory cell groups, which groups are obtained by dividing a memory cell array into N parts formed by arranging memory cells in matrix form;

memory cell group selecting lines for selecting one of said memory cell groups;

row decoders for decoding the row address data of a memory cell group to be accessed;

front-end word lines connected to the output terminals of said row decoders, respectively.

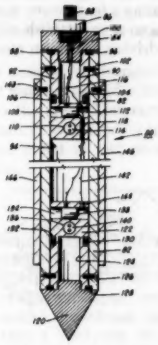
AND gates for ANDing selecting signals on said memory cell group selecting lines and output signals of said front-end word lines; and

word lines connected to the output terminals of said AND gates, respectively.

4,542,487
METHOD AND APPARATUS FOR SHEAR WAVE LOGGING

William M. Benzing, Oklahoma City; Waldo C. Patterson, and Lawrence C. Cadle, both of Ponca City, all of Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Nov. 12, 1982, Ser. No. 440,980
Int. Cl.[4] G01V *1/40*
U.S. Cl. 367—31 6 Claims



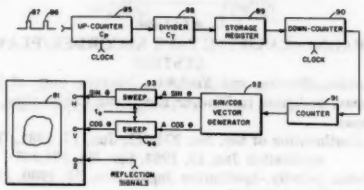
1. Apparatus for shear wave detection along a defined earth borehole, comprising:
elongated cylindrical tube means of rigid material;
logging cable means providing movable suspension of said tube means in said borehole;
upper end cap means secured sealingly on one end of said tube means and being secured to said cable means;
upper geophone housing means secured to said end cap means and extended into sealed seating within said tube means, said housing means having first and second transverse orthogonal bores formed in juxtaposition;
lower end cone means secured sealingly on the opposite end of said tube means;
lower geophone housing means secured to said end cone means and extended into sealed seating within said tube means, said housing means having third and fourth transverse orthogonal bores formed in juxtaposition; and
a respective horizontal wave motion detector securely disposed in each of the first, second, third and fourth bores.

4,542,488
METHOD AND SYSTEM FOR PRODUCING A PPI DISPLAY

James A. Clishem, Carrollton; Charles L. Dennis, and Joseph Zemanek, Jr., both of Dallas, all of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 22, 1982, Ser. No. 400,842
Int. Cl.[4] G01V *1/40*
U.S. Cl. 367—35 10 Claims

1. A method for recording data obtained from azimuthal scanning operations within a borehole, comprising:
(a) cyclically rotating energy transmitting and receiving means in a borehole,
(b) operating said transmitting means during each cycle to transmit energy pulses,
(c) operating said receiving means to detect said energy pulses as they are reflected back to said receiving means,
(d) producing orienting pulses each time said transmitting and receiving means pass a known geographic orientation,
(e) measuring the time variable periods between said orienting pulses,
(f) producing sine and cosine functions in response to each of said orienting pulses, said sine and cosine functions having variable time periods corresponding to said measured time variable periods,
(g) producing first and second time variable sweep functions corresponding to said time variable sine and cosine functions respectively,
(h) applying one of said time variable sweep functions to the horizontal deflection means of a PPI display system and the other of said time variable sweep functions to the vertical deflection means of the PPI display system to

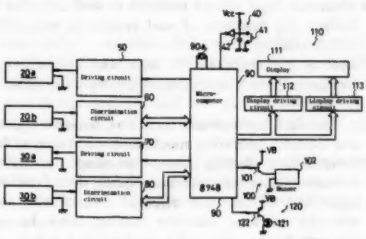


rotate the sweep of the electron beam of the PPI display system in a reference circle corresponding in time to the time period between the pairs of time variable orientation pulses, whereby a uniform reference circle is continuously generated on the face of the PPI display medium, regardless of variability in the occurrences of said orienting pulses, and
(i) applying said detected energy pulses to the electron beam modulating means of said PPI display to produce an azimuthal display of said scanning operations.

4,542,489
OBJECT DETECTING SYSTEM OF REFLECTION TYPE

Yoshihiro Naruse, Tokyo, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Japan

Filed May 18, 1983, Ser. No. 495,910
Claims priority, application Japan, May 18, 1982, 57-83717; Jun. 11, 1982, 57-100248
Int. Cl.[4] G08B *13/16*
U.S. Cl. 367—93 20 Claims



1. An object detecting system of reflection type comprising:
a ultrasonic wave generating means adapted to generate ultrasonic waves;
a driving means adapted to drive said ultrasonic wave generating means;
a ultrasonic wave receiving means adapted to receive ultrasonic waves and disposed a predetermined space from said ultrasonic wave generating means;
an amplifying means adapted to amplify a signal from said ultrasonic wave receiving means;
an object discriminating means adapted to generate a signal indicating the presence or absence of objects in accordance with a level of the signal obtained from said amplifying means; and
an electronic control unit which energizes said driving

means, which changes at least one of an energized level of said driving means, a gain of said amplifying means and a discrimination level of said object discriminating means, when said object discriminating means judges that there exists no object, and which calculates the distance in accordance with a time period from the energization of said driving means to judgement by said object discriminating means to indicate the presence of objects in response to a signal from said object discrimination means.

4,542,490

RADIO - CASSETTE TAPE RECORDER/PLAYER SYSTEM

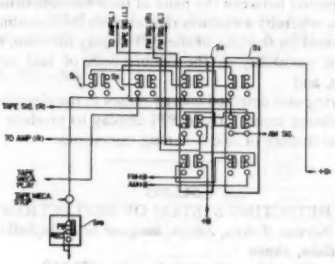
Katsuhisa Shimizu, and Yoshihiro Magata, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 274,612, Jun. 17, 1981,. This application Jan. 19, 1984, Ser. No. 571,647

Claims priority, application Japan, Jun. 24, 1980, 55-85424; Sep. 8, 1980, 55-124247

Int. Cl.⁴ H04Q *1/18*; G11B *15/02*

U.S. Cl. 369—6 **8 Claims**



1. A radio-cassette tape recorder/player system, comprising;

a plurality of switches for effecting at least a cassette tape recording function, a cassette tape playing function, an AM reception function and an FM reception function, respectively;

an electrical logic circuit coupled to said switches for controlling the function of said system in response to the switch selected;

at least an AM tuner, an FM tuner and a cassette operating mechanism, each being controlled by said electrical logic circuit;

said electrical logic circuit including means for controlling said cassette operating mechanism such that at least said cassette tape playing function is directly achieved upon the actuation of only a corresponding one of said switches, regardless of the then effected one of said functions, whereby at least cassette playing may be achieved through the operation of a single switch when switching from others of said functions.

4,542,491

OPTICAL INFORMATION DISC APPARATUS WITH AUTOFOCUSING SERVO SYSTEM

Masahiro Takasago; Takeshi Maeda, both of Odawara; Motoo Uno, Kokubunji, and Yasumitsu Mizoguchi, Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 3, 1982, Ser. No. 438,774

Claims priority, application Japan, Nov. 17, 1981, 56-184091

Int. Cl.⁴ G11B *7/00*

U.S. Cl. 369—45 **10 Claims**

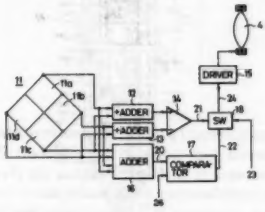
1. An optical information disc apparatus for optically scanning a recording medium on which information is recorded, comprising:

optical means including a laser source and a converging lens for focusing a laser beam from a laser source into said recording medium;

first detecting means for detecting the laser beam reflected from said recording medium and for producing electric signals which indicate a focus error representative of the extent to which the laser beam is out of focus on said recording medium;

driving means for varying the relative distance between said converging lens and said recording means;

first circuit means responsive to the output of said first detecting means for generating a focus error signal for application to said driving means so as to establish with said first detecting means and said driving means an auto focus servo system;



second circuit means for generating a gradual control signal to be applied to said driving means when said converging lens is spaced from said recording medium by more than a predetermined amount so that said converging lens is moved toward said recording medium in response to the gradual control signal;

second detecting means for generating a timing signal indicating that said converging lens and said recording medium have a predetermined relationship; and

switching means connected to said first and second circuit means for applying said gradual control signal to said driving means in the absence of said timing signal and for applying said focus error signal to said driving means instead of said gradual control signal in response to said timing signal.

4,542,492

OPTICAL HEAD IN A RECORDING AND READING DEVICE FOR A DATA CARRIER

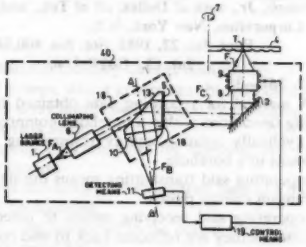
Dominique Leterme, and Jean-Pierre Le Mèrer, both of Paris, France, assignors to Thomson CSF, Paris, France

Filed Feb. 22, 1983, Ser. No. 468,684

Claims priority, application France, Mar. 9, 1982, 82 03936

Int. Cl.⁴ G11B *7/12*

U.S. Cl. 369—46 **21 Claims**



1. A device for optically sensing data at a reference surface of a data carrier, said device comprising:

a semi-conductor laser source emitting rectilinearly polarized optical energy;

collimator means for gathering said optical energy and forming therefrom a bundle of parallel rays of predetermined cross section;

polarization beam splitter means having a polarization splitting planar face receiving said bundle of parallel rays at oblique incidence from an external medium of low refractive index to which said polarization splitting planar face is exposed, whereby the portion of said bundle of parallel rays selectively transmitted by said planar face travels in a contiguous material of high refractive index for modifying the shape of said cross section;

photodetector means arranged downstream of said planar face;

optical means for causing said transmitted bundle of parallel rays to locally interact in said reference surface and for collecting from the area of interaction optical energy of crossed polarization, which being selectively reflected by said planar face is fed to said photodetector means for sensing said data.

4,542,493

PICKUP STYLUS HAVING FUSED DIAMOND AND CERAMIC BODIES WITH CONDUCTIVE SURFACES FOR CAPACITANCE DISK RECORDS

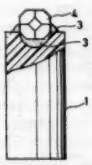
Hideaki Takehara, Fujisawa, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Dec. 4, 1981, Ser. No. 327,672

Claims priority, application Japan, Dec. 5, 1980, 55-171828

Int. Cl.⁴ G11B *9/06, 11/00*

U.S. Cl. 369—126 **6 Claims**



1. A pickup stylus for capacitance disk records comprising:

a ceramic body having a bore on one end thereof;

a diamond body having a surface and having a conductive layer of carbon as an integral part of said surface, the diamond body partially extending into said bore; and

an oxidation resistant soldering material for soldering said bodies together.

4,542,494

ARRANGEMENT FOR FASTENING A PHONOGRAPH STYLUS HOLDER TO THE TONE ARM

Jiri Janda, Prague, Czechoslovakia, assignor to TESLA, koncernoxy podnik, Prague, Czechoslovakia

Filed Oct. 22, 1982, Ser. No. 435,918

Claims priority, application Czechoslovakia, Apr. 20, 1982, 2826-82

Int. Cl.⁴ G11B *3/02*

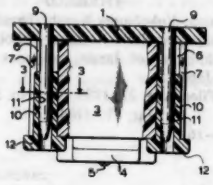
U.S. Cl. 369—256 **6 Claims**

1. An arrangement for fastening a phonograph stylus holder beneath its tone arm, comprising

pins electrically connected with at least one supply conductor for the stylus holder and having a smooth cylindrical surface fixed to the tone arm;

sleeves situated in openings in the stylus holder and adapted to be slipped onto and frictionally to engage the pins, the sleeves being mounted on the stylus holder for rotation about respective axes parallel to external cylindrical surfaces of the sleeves to provide angular adjustment of the stylus holder with respect to the tone arm;

internal passages within the sleeves that are eccentric with respect to the external cylindrical surfaces of the sleeves; and



flanges at the lower ends of the sleeves which overlap with the lower opposite edges of the stylus holder.

4,542,495

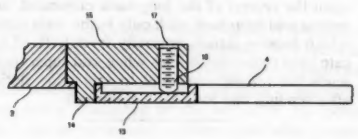
HERMETICALLY SEALED DISK CARTRIDGE WITH ADJUSTABLE OPTICAL WINDOW

William R. A. Ziegler, Longmont, and Richard B. MacAnally, Boulder, both of Colo., assignors to Storage Technology Partners II, Louisville, Colo.

Filed Oct. 31, 1983, Ser. No. 547,271

Int. Cl.⁴ G11B *17/04, 23/02*

U.S. Cl. 369—273 **1 Claim**



1. An information recording disk cartridge for protectively housing an information storage and retrieval disk in an optical information storage and retrieval device of a type having a disk rotating on a device spindle, said cartridge comprised of:

a cartridge casing for protectively housing said disk;

a light transmissive window;

means for sealably and adjustably attaching said light transmissive window in a first opening in said casing, said first opening located on an upper surface of said casing, said means comprising:

a window frame having an outer circumference securely bonded to said first opening in said casing, and having at least three threaded holes through an inner diameter for passage of threaded adjusting screws;

a flexure mount having an interior circumference sealably bonded around said window and an outer circumference sealably bonded to a rim on said window frame, said flexure mount therefor able to flex upward and downward; and

at least three threaded adjusting screws having a length sufficient to pass through said window frame threaded holes and contact an upper inner surface of said flexure mount, such that said screws can be individually adjusted so as to place said window co-planar with respect to said disk disposed in said cartridge casing; and

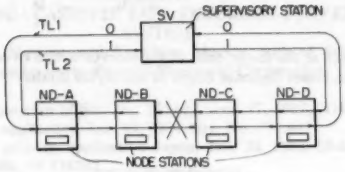
means for transmitting device spindle rotation to said disk disposed in said cartridge casing.

4,542,496

LOOP TRANSMISSION SYSTEM AND METHOD OF CONTROLLING THE LOOP-BACK CONDITION THEREOF

Akira Takeyama, Yokohama; Kenshi Tazaki, Kashiwa; Satoshi Nojima, Tokyo; Norihiro Aritaka, Yokohama, and Teruyoshi Mita, Machida, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 22, 1983, Ser. No. 525,464
Int. Cl.[4] H04J *3/08*
U.S. Cl. 370—16 **19 Claims**



1. A loop transmission system, comprising:

a plurality of node station means;

a supervisory station for sending a loop-back command and a release command; and

duplicate loop transmission lines, connected to said plurality of node station means and said supervisory station, which lines transmit signals in opposite directions;

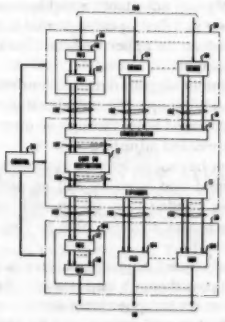
said supervisory station sends out the loop-back command to both of said duplicate loop transmission lines when faults are detected on both of said duplicate loop transmission lines at the same time, wherein each of said node station means being for establishing a loop-back path while retaining a connection path to an adjacent node station means upon the receipt of the loop-back command, and for releasing said loop-back path only in the node station means which receive signals normally from both of said duplicate loop transmission lines when said supervisory station sends the release command to said node station means after sending said loop-back command.

4,542,497

WIDEBAND DIGITAL SWITCHING NETWORK

Alan Huang, Ocean, and Scott C. Knauer, Englishtown, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 28, 1983, Ser. No. 479,669
Int. Cl.[4] H04Q *11/04*; H04J *6/02*
U.S. Cl. 370—60 **11 Claims**



1. A non-blocking wide bandwidth system for connecting a plurality of incoming signal lines (100) to a plurality of outgoing signal lines (110), each of said incoming lines carrying time multiplexed signals and each of said signals having a characteristic bandwidth and a destination address accompanying its data, said system comprising:

a demultiplexer (101) connected to each of said incoming lines and demultiplexing said time multiplexed signals to form an alterable plurality of signal channels, each having the same preselected bandwidth;

a non-blocking space division switch (10) having switch input and output ports and responsive to said signal channels of said demultiplexers applied to said switch input ports, for simultaneously switching the signal of each of said signal channels to a switch output port which is related to said destination address accompanying the data of said signal; and

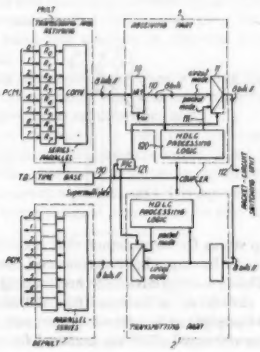
a plurality of multiplexers (104), each multiplexing the signals of a chosen number of said switch output ports onto one of said outgoing signal lines.

4,542,498

HIGH BIT-RATE COUPLER BETWEEN A PCM CHANNEL MULTIPLEX AND A PACKET SWITCHING UNIT

Christian Y. Bodros, Squibernevez-Pédernec, 22540 Louargat; Joël V. Le Besco, Kerhars, Caouennec, 22300 Lannion, and Yves R. Sichez, 14, rue de Saintonge, 29200 Brest, all of France

Filed May 5, 1983, Ser. No. 491,656
Claims priority, application France, May 10, 1982, 82 08081
Int. Cl.[4] H04Q *11/04*; H04J *3/16*
U.S. Cl. 370—60 **11 Claims**



1. A coupler between a PCM channel bidirectional multiplex and a packet switching unit, the PCM channels carrying words with a predetermined number of bits and being multiplexed word by word, the PCM channels being multiplexed packet mode channels each carrying data word frames separated from each other by at least one flag and including filling bits having a first predetermined binary value such that said frame are without flags, said coupler comprising receiving means for extracting the filling bits from frames received from said multiplex and for supplying said received frames without said filling bits to said switching unit, and transmitting means for inserting said filling bits in transmitted frames derived by said switching unit and for supplying said transmitted frames with said filling bits to said multiplex, said receiving means and transmitting means each comprising: logic means for processing only one channel word at a time to derive at least one portion of said channel word, the derived channel word portion being in the form of a word, and memory means having as many memory cells as the number of said channels for storing the contents of each channel in the cells, said contents of a word being written into the memory means after a word in a channel has been processed by the logic means and read from the memory means at a time to enable the next word in said channel to be pro-

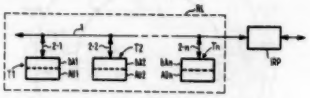
cessed by the logic means after the other channels have been processed by the logic means, the writing and reading being at the rate of one word per channel.

4,542,499

DISTRIBUTED CONTROL SYSTEM FOR MULTIPLE RANDOM ACCESS TO THE TRANSMISSION LINE OF A LOCAL NETWORK FOR SPEECH AND DATA

Luigi Bella, Turin; Roberto Brignolo, Settimo Torinese; Giulio Barberis, and Maurizio Sposini, both of Turin, all of Italy, assignors to cselt centro studi e Laboratori Telecomunicazioni SPA, Turin, Italy

Filed Sep. 28, 1982, Ser. No. 425,858
Claims priority, application Italy, Oct. 20, 1981, 68352 A/81
Int. Cl.⁴ H04J *3/02, 6/00, 3/00*
U.S. Cl. 370—85 **5 Claims**



1. A process for multiple access random to a transmission line in a local network for speech and data transmission, which network comprises a plurality of stations mutually exchanging information through said lines in packet form, comprising the steps of subdividing station active periods at each station under exclusive control of a local timing system into frames having each a duration equal to a time elapsing between the generation of two subsequent packets relating to speech communication independently of all other stations and, during each said frame, alloting to the speech communications time slots equal to the duration of transmission of a packet which time slots are reserved to said speech communication for their whole duration, thus implementing synchronous communication channels; and forming a map of line occupations by speech communication is built up at each station, wherein for building up said map instants of beginnings of said transmission of said packets of fixed length of speech communications to which a synchronous channel has been allotted, said storage being disabled by collision detection, said synchronous channels in a frame are grouped together, and in that the time intervals not allotted to the speech communications are utilized both for data communications, which do not require the synchronous characteristics to be maintained and for the booking of furhter speech communication by each station, the time slots which may be allotted to speech communication forming a predetermined fraction of a frame duration, the stored instants for each packet being stored only for said allotted time slots.

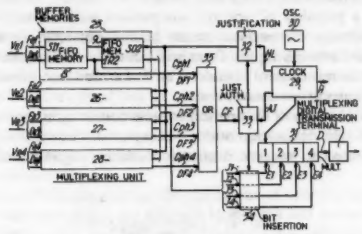
4,542,500

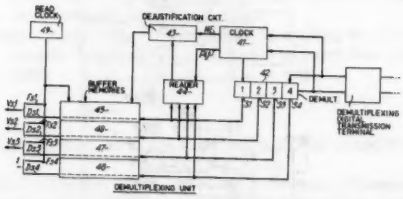
MULTIPLEXING AND DEMULTIPLEXING SYSTEM WITH JUSTIFICATION

Billy Jean-Claude, Saint Quay Perros, E-22700 Perros-Guirec, France

Continuation of Ser. No. 349,014, Feb. 16, 1982, abandoned.
This application Nov. 14, 1984, Ser. No. 671,030
Claims priority, application France, Feb. 19, 1981, 81 03688
Int. Cl.⁴ H04J *3/07*
U.S. Cl. 370—102 **9 Claims**

1. A multiplexing system with justified conversion from low rate synchronous digital signals to high rate plesiochronous digital signals, said system including time base clock circuit means, multiplexer means having an output coupled to a high rate transmission line, a plurality of synchronization means respectively connected to receive signals from a low rate transmission line, common justification circuit means having write clock signals for supplying clock signals to said synchronization means, a common justification control circuit having a clock input connected to a corresponding output of the time base clock circuit means, common justification bit insertion circuit means, a control output being connected to a control input of the common justification circuit means and data output being connected to a control input of a common justification bit insertion circuit means, said bit insertion circuit means having data inputs which are individually associated with outputs of the synchronization means and which deliver high rate plesiochronous digital signals, two input comparator





means, local clock source means synchronized responsive to an applied low rate synchronous digital signals, the control input of the common justification control means being connected to the output of said comparator means, one input of said comparator means being connected to the output of the common justification circuit means and another input being connected to an output of said local clock source means, said local clock source means being independent of said low rate synchronous digital signals insofar as jitter is concerned.

4,542,501

INTERFACE FOR MANAGING INFORMATION EXCHANGES ON A COMMUNICATIONS BUS

Jean Chevalet, Paris, and Robert Reeves, Montigny, both of France, assignors to Centre National de la Recherche Scientifique, Paris, France

Filed Nov. 21, 1983, Ser. No. 554,048
Claims priority, application France, Nov. 25, 1982, 82 19780
Int. Cl.⁴ H04J *3/02*
U.S. Cl. 370—85 **20 Claims**

1. An interface arrangement for managing the exchange of information between units connected by a communications bus, said units including at least one control unit and a plurality of peripheral units, each of said units having a distinct address, any one of said units being capable of transmitting and receiving information comprising data and a destination address, said destination address corresponding to the address of the one of said units which receives transmitted information wherein said interface arrangement comprises:

(a) a plurality of data reception means, each of said data reception means being connected to receive information from said communications bus and to transmit information to an associated one of said units;

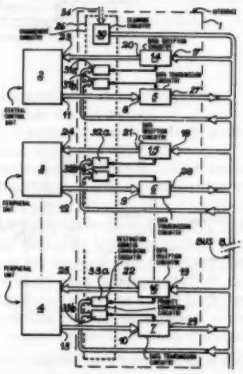
(b) a plurality of data transmission means, each of said data transmission means being connected to transmit informa-

tion to said communications bus and to receive information from said associated one of said units;

(c) scanning means for generating address signals in a predetermined sequence, said scanning means being connected to transmit said address signals to said communications bus, said address signals representing the addresses of said units and said predetermined sequence corresponding to the order of priority of said units for access to said communications bus by said units;

(d) a plurality of priority comparison means, each of said priority comparison means being connected to receive said address signals from said communications bus and to transmit control signals to an associated one of said data transmission means; and

(e) a plurality of destination address comparison means, each of said destination address comparison means being connected to receive destination address signals from said



communications bus and to transmit control signals to an associated one of said data reception means,

wherein each of said priority comparison means compares said address signals generated by said scanning means with signals representing the address of an associated unit and generates an equality signal in response to correspondence, each of said destination address comparison means compares destination address signals received from said communications bus with signals representing the address of an associated unit and generates an equality signal in response to correspondence, each of said priority comparison means in which said equality signal was not generated being disabled from transmitting a data transmission enabling signal to said associated data transmisssion means and each of said destination address comparison means in which said equality signal was not generated being disabled from transmitting a data reception enabling signal to said associated data reception means.

4,542,502

RECONFIGURABLE COLLISION AVOIDING SYSTEM, STATION AND PROTOCOL FOR A TWO PATH MULTIPLE ACCESS DIGITAL COMMUNICATIONS SYSTEM

Frank H. Levinson, Hanover Township, Morris County, and John O. Limb, Berkeley Heights, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 30, 1983, Ser. No. 567,350

Int. Cl.⁴ H04J *3/00*

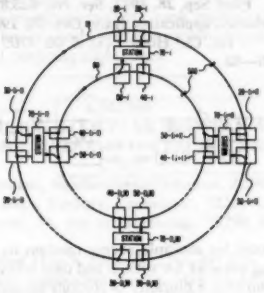
U.S. Cl. 370—88 **14 Claims**

1. A method for controlling digital signals in a communication system, said system including a plurality of stations where at least two of said stations are coupled to both a first and a second signal path and each of the first and second signal paths forms a separate ring, the method comprising the steps of:

generating a separate start cycle packet including a start cycle field by a first one of the plurality of stations for transmission as a start cycle packet on each of the first and second paths;

each station being responsive to the start cycle signal in the start cycle packet on either one of the first and second paths for initializing that station to transmit a packet of information on the path including that start cycle packet;

each station reading signals including a busy control field of



each sequential packet from either one of the first and second paths for detecting from the busy control field of each packet whether or not that packet is busy and includes information transmitted by another station in an information field;

each station including information to be transmitted being responsive to both, being initialized by the start cycle signal and the busy control field indicating that a packet is not busy on either one of the two paths for overwriting (a) that packet's busy control field to indicate that the packet is busy and (b) that packet's information field with the information to be transmitted.

4,542,503

ARRANGEMENT FOR THE SYNCHRONOUS DEMULTIPLEXING OF A TIME DIVISION MULTIPLEX SIGNAL

Heinrich Fladerer, Planegg, and Johann Magerl, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 11, 1983, Ser. No. 522,017

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1982, 3230064

Int. Cl.⁴ H04J *3/06, 3/00*

U.S. Cl. 370—100 **16 Claims**

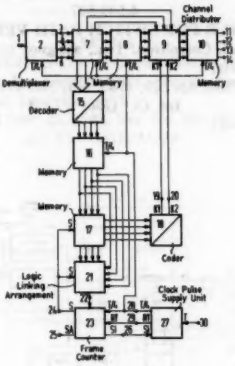
1. An arrangement for synchronizing outgoing channels at the outputs of a demultiplexer by frame code words received as blocks in an incoming channel of a time-division multiplex system, comprising:

a demultiplexer comprising an input for receiving the time-division multiplexed signal, a chain circuit connected to said input and including n−1 delay elements, each having a one bit delay of the time, and a plurality of taps including said input as a zero delay tap, and a first memory comprising n D flip-flops each including an input connected to a respective tap and an output defining a respective channel;

a transmission path including an input connected to said outputs of said D flip-flops for receiving frame code words from said channels, an output for providing synchronized outgoing channels, a second memory connected to said input, a third memory connected to said second memory, a channel distributor connected to said

third memory, and a fourth memory connected between said channel distributor and said outputs and

a control path comprising a decoder connected to said second memory for decoding frame code words, a fifth memory connected to said decoder, a sixth memory connected to said fifth memory and including a switch through output, a logic linking arrangement connected to said fifth and sixth memories, for recognizing frame code words, a



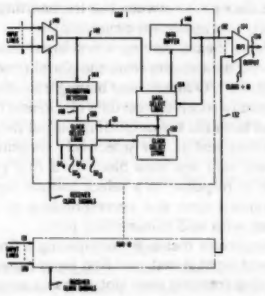
frame counter connected to said logic linking arrangement for counting frames and connected to said logic linking arrangement and to said sixth memory to cause switch through of a corresponding channel predetermined in response to the recognition of a number of frame code words, and a coder connected to said switch through output and to said channel distributor for causing synchronous distribution of the output channels via said fourth memory.

4,542,504

SHARED DATA RECEIVER

Robert A. Moul, Naperville, and William Thelen, Glen Ellyn, both of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 22, 1983, Ser. No. 525,112
Int. Cl.[4] H04J *3/06;* **H03D** *3/22*
U.S. Cl. 370—100 **8 Claims**



1. A synchronous shared data receiver for multiplexing pulse data from a plurality of data sources asynchronous with respect to each other and each having substantially identical nominal pulse transmission rates and pulse intervals, comprising

input multiplexing means **(140)** operated by receiver clock signals occurring at an integer multiple of the nominal pulse transmission rate for cyclically sampling the data sources in succession to generate a prescribed number of interleaved plural samples of the pulse state of each data source during each consecutive time period equal in duration to a data pulse interval,

transition detection means **(144)** responsive to the samples from the input multiplexing means for detecting pulse state transitions on each data source and for generating an output stream of state transition signals in response thereto,

means **(150)** operated by prescribed one or ones of the receiver clock signals defining a first predetermined subinterval in the first half of a nominal pulse interval and by other prescribed one or ones of the clock signals defining a second predetermined subinterval in the second half of a nominal pulse interval for detecting pulse transitions from the detecting means occurring during the first and second subintervals,

means **(242)** for storing identifications of sources on which pulse transitions are detected in the first and second subintervals and indications of the respective subintervals in which the transitions are detected for each source,

means **(150, 152, 154)** responsive to the stored identifications and indications for selecting a sample from each data source from among the plural samples generated during each consecutive time period, and

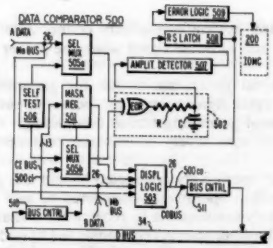
output means **(146)** for sequentially transmittng the selected samples from each data source onto an ouput data source **(132)**.

4,542,505

ADJUSTABLE SYSTEM FOR SKEW COMPARISON OF DIGITAL SIGNALS

Peter P. Binoeder, Tustin, and James B. Whitacre, Westminster, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Nov. 14, 1983, Ser. No. 551,080
Int. Cl.[4] G01R *31/28;* **G06F** *11/00*
U.S. Cl. 371—1 **6 Claims**



1. A digital signal comparison apparatus for comparing comparable pairs of digital signals from a standard reference module with a module-under-test, the combination comprising:

(a) skew comparison circuit means for generating an error signal when tested pairs of digital signals shown transition times beyond a pre-set tolerance level;

(b) select multiplexor means for channeling comparable pairs of digital signals to said skew comparison circuit means, said select multiplexore means including:

(b1) select control signal input means connected to receive select control signals from an I/O maintenance processor means;

(b2) mask signal input means connected to receive masking signals from a mask register means;

(b3) a first plurality of data signal input means from a standard reference digital module;

(b4) a second plurality of data signal input means from a digital module-under-test;

(c) mask register means, controlled by said I/O maintenance processor means, for inhibiting selected pairs of data signal lines from being transmitted to said skew comparison circuit means;

(d) said I/O maintenance processor means connected to receive said error signal from said skew comparison means, and including:

(d1) means to set said mask register means for selecting those pairs of input lines to said select multiplexor means which are to be inhibited.

4,542,506

CONTROL SYSTEM HAVING A SELF-DIAGNOSTIC FUNCTION

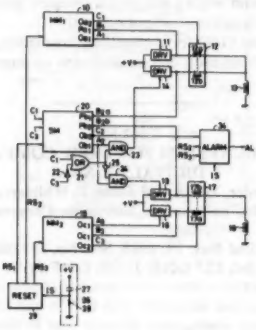
Hidemi Oe, Tokyo, and Kiyotaka Hayashi, Saitama, both of Japan, assignors to NEC Home Electronics Ltd., Osaka and Honda Giken Kogyo Kabushiki Kaisha, Tokyo, both of, Japan

Filed Jun. 29, 1982, Ser. No. 393,323

Claims priority, application Japan, Jun. 30, 1981, 56-100416; Jun. 30, 1981, 56-100417; Jun. 30, 1981, 56-100418

Int. Cl.⁴ G06F *11/00*

U.S. Cl. 371—9 **4 Claims**



1. A control system operatively connectable to receive a clock signal and an initial signal when the power is turned on, comprising:

a reset signal generating circuit for generating first and second reset signals when the power is turned on, said reset signal generating circuit comprising:

an OR gate operatively connectable to receive the clock signal;

an inverter operatively connected to said OR gate;

a first flip-flop operatively connected to said inverter and operatively connectable to receive the initial signal;

a second flip-flop, operatively connected to said inverter and said first flip-flop and operatively connectable to receive the initial signal, for generating the second reset signal;

a third flip-flop operatively connected to said second flip-flop and said inverter and operatively connectable to receive the initial signal;

a fourth flip-flop operatively connected to said third flip-flop and said OR gate and operatively connectable to receive the clock signal and the initial signal; and

an AND gate, operatively connected to said OR gate and said first flip-flop, for generating the first reset signal;

main control system means, operatively connected to said reset signal generating circuit, for generating a first failure signal in dependence upon a diagnostic test initiated by the second reset signal;

sub-control system means, operatively connected to said main control system means and said reset signal generating circuit, for performing sub-control system diagnostics in dependence upon the first reset signal and the first failure signal and for generating a second failure signal in dependence upon the sub-control system diagnostics and the first failure signal; and

an alarm circuit, operatively connected to said reset signal generating circuit and said sub-control system means, for generating an alarm signal in dependence upon the second reset signal and the second failure signal.

4,542,507

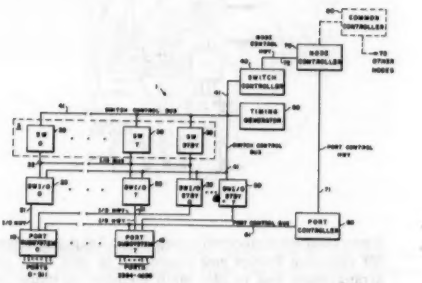
APPARATUS FOR SWITCH PATH VERIFICATION

Edgar L. Read, Carrollton, Tex., assignor to Honeywell Inc., Phoenix, Ariz.

Filed Apr. 29, 1983, Ser. No. 490,009

Int. Cl.⁴ G06F *11/04*

U.S. Cl. 371—22 **7 Claims**



1. In a digital transmission system having a plurality of input/output (I/O) means for receiving digital input data from a plurality of ports and transmitting digital output data to a plurality of ports, each I/O means having a predetermined number of ports associated therewith, each port of the digital transmission system having a unique identifier, wherein a first port of said digital transmission system communicates with a second port said digital transmission system via a data path through the digital transmission system, the first port being designated a transmitting port and the second port being designated a receiving port, the data path including a digital switching matrix and the I/O means associated with the transmitting port and the I/O means associated with the receiving port, each I/O means being operatively connected to said digital switching, matrix, each I/O means including apparatus for verifying the data path between the transmitting port and the receiving port, said apparatus comprising:

(a) multiplexer means, having a first input terminal adapted to receive a data stream from the plurality of ports associated with the I/O means, and having a second input terminal adapted to receive a test data block, and further having an output terminal for outputting output data to said digital switching matrix, for selectively outputting said data stream and said test data block in a first predetermined time slot in response to a select control signal, said first predetermined time slot corresponding to the time slot associated with said transmitting port;

(b) first comparator means for comparing a first input signal to a second input signal, and first input signal indicating a commanded transmit time slot and said second input signal indicating a time slot corresponding to the time slot of the data stream, the data from each port being allocated a predetermined time slot within the data stream, to output said select control signal when said first input signal is equal to said second input signal;

(c) second comparator means for comparing a third input signal to said second input signal, said third input signal indicating a commanded receive time slot which corresponds to a time slot of the receiving port, to output an

enable signal when said third input signal is equal to said second input signal; and

(d) examining means having an enable terminal adapted to receive said enable signal, for extracting said test data block from said data stream to examine the test data block received by the I/O means associated with said receiving port in response to said enable signal thereby determining whether the test data block has been received error-free thereby verifying said data path.

4,542,508

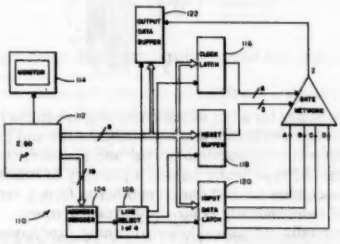
AMENABLE LOGIC GATE AND METHOD OF TESTING

Donald W. Moore, Los Angeles, Calif., assignor to Aerojet-General Corporation, La Jolla, Calif.

Filed Nov. 21, 1983, Ser. No. 553,571

Int. Cl.⁴ G01R *31/28*

U.S. Cl. 371—29 **30 Claims**



1. A logic gate structure having a plurality of data inputs and a data output and comprising:

a plurality of interconnected replicated multi-variable data input nodes, each such node having a plurality of control input lines for selecting operation of said node in accordance with any one of all possible Boolean logic functions for the number of variables;

a plurality of memory devices, at least one such memory device being associated respectively with each such node and being connected to said node control input lines for selecting said node operation;

a plurality of registers, at least one such register being associated respectively with each such memory device for sequentially selecting the output of said memory device for application to said node control lines; and

means for sequentially applying selected binary signals to said registers and to said nodes for exhaustively testing each node of said logic gate structure;

said plurality of nodes being configured in a hierarchial array comprising a single node top layer and a plurality of successively lower layers, each such lower layer having more nodes than the top layer, the top layer data output being the data output of said gate structure, the lowest layer data inputs being the data inputs to said gate structure, each layer above said lowest layer being configured to receive data inputs only from the immediately lower layer.

4,542,509

FAULT TESTING A CLOCK DISTRIBUTION NETWORK

Gregory S. Buchanan, Danbury, Conn., and John J. DeFazio, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 31, 1983, Ser. No. 547,179

Int. Cl.⁴ G01R *31/28*

U.S. Cl. 371—61 **15 Claims**

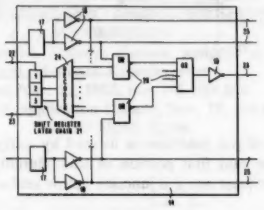
1. A method of fault testing a clock distribution network which fans out a clock signal to a plurality of clock signal lines, by performing the following steps on a clock signal line:

connecting the clock signal line under test to a test latch;

inhibiting said clock distribution network;

setting said test latch to a first logic value, while maintaining a second logic value at the input thereof;

monitoring the output of said test latch, to ascertain whether said second logic value propagates through said test latch notwithstanding the inhibition of said clock distribution network;



enabling said clock distribution network; and

monitoring the output of said test latch, to ascertain whether said second logic value fails to propagate through said test latch, notwithstanding the enabling of said clock distribution network.

4,542,510

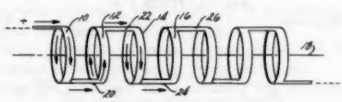
LOW INDUCTANCE MAGNETIC WIGGLER

Maurice D. Black, Jr., Simi Valley, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 26, 1983, Ser. No. 526,744

Int. Cl.⁴ H01S *3/00*

U.S. Cl. 372—2 **5 Claims**



1. A low inductance wiggler for an electron beam laser comprising:

a plurality of annular conductors having their centers spaced along a common axis, and a plurality of straight conductors, each pair of adjacent annular conductors being connected by one of said straight conductors, the straight conductors extending parallel to said axis and being alternately positioned on diametrically opposite sides of said axis.

4,542,511

SEMI-CONDUCTOR LASERS

Robert C. Goodfellow, Brackley, and Malcolm E. Harding, Stony Stratford, both of England, assignors to Plessey Overseas Limited, Ilford, England

Filed Feb. 23, 1983, Ser. No. 469,094

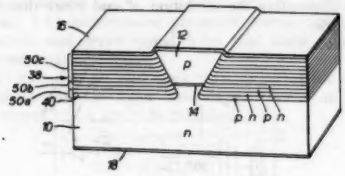
Claims priority, application United Kingdom, Feb. 24, 1982, 8205445

Int. Cl.⁴ H01S *3/19*

U.S. Cl. 372—46 **6 Claims**

1. In a semi-conductor laser comprising a plurality of epitaxial layers and a buried active laser layer characterised in that said active laser layer is located between a layer of n-type material and a layer of p-type material, the n-type layer and the p-type layer together having a trapezoidal cross-sectional shape, the sides of said active laser layer and at least a portion of each of said n-type layer and said p-type layer being covered by a plurality of thin layers which are substantially planar whereby the ends of a first, second and third portion of said

plurality of thin layers abut the sides of said n-type layer, said active laser layer and said p-type layer, respectively, said plurality of thin layers having a doping sequence such that a



plurality of p-n junctions is formed by said plurality of thin layers and said first portion of said plurality of thin layers forming at least one p-n junction below said active laser layer.

4,542,512

SEMICONDUCTOR LASER HAVING A METAL-FILLED GROOVE FOR IMPROVED COOLING AND STABILITY

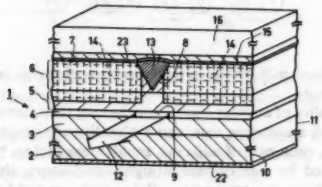
Johannes A. C. Van Den Beemt, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 31, 1983, Ser. No. 481,006

Claims priority, application Netherlands, Apr. 2, 1982, 8201409

Int. Cl.⁴ H01S *3/19*

U.S. Cl. 322—46 **8 Claims**



1. A semiconductor laser having a semiconductor body comprising at least a first passive semiconductor layer of a first conductivity type, an active semiconductor layer disposed thereon and a second passive semiconductor layer of a second, opposite conductivity type disposed on said active layer, a pn junction between the first and the second passive layers and a groove on the side of said second passive layer in the surface of said semiconductor body, which groove extends at most over only part of the thickness of said second passive layer, upon the application of a voltage in the forward direction across the pn junction by electrode means, coherent electromagnetic radiation being produced in a strip-shaped part of said active layer lying below said groove and situated between two reflecting side faces of said semiconductor body substantially at right angles thereto, for which radiation said passive layers have a lower refractive index than said active layer, characterized in that said groove is filled selectively with a metal at least up to the level of said surface and in that on both sides of said metal an electrically substantially insulating region is present which adjoins said metal and extends from the surface over part of the thickness of said second passive layer.

4,542,513

HEATER FOR HOT ISOSTATIC PRESSING APPARATUS

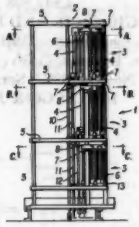
Yoichi Inoue, Hyogo, Japan, assignor to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Aug. 5, 1983, Ser. No. 520,711

Claims priority, application Japan, Aug. 7, 1982, 57-120080[U]

Int. Cl.⁴ F27D *11/00, 7/02*

U.S. Cl. 373—112 **5 Claims**



1. A heater for a hot isostatic pressing apparatus for treating at least one workpiece in a high temperature and pressure gas atmosphere by application of heat and pressure, comprising:

a stacked type heater having a plurality of heating element assemblies stacked one on another to form a vertical series of independently controllable heating zones;

a generally cylindrical heater retaining cage having a plurality of annular graphitic members serving as girdle frames, a plurality of graphitic support columns serving as vertical frames, and a plurality of electric insulators connecting said annular members and support columns with each other and defining a series of divided sections around said heater retaining cage in each one of said heating zones; and

a plurality of segmental graphitic heating elements supported in the respective divided sections of said heater retaining cage and extending between said plurality of insulators so as to form an independent heating circuit in each heating zone wherein said segmental heating elements are disposed in a space defined by a plurality of vertical planes containing inner and outer peripheries of said plurality of annular graphitic members.

4,542,514

METHOD OF MEASURING QUALITY OF A SIGNAL RECEIVED BY A RECEIVER OF A TWO-DIMENSIONAL LINEAR MODULATION DATA COMMUNICATION SYSTEM

Kojiro Watanabe, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 4, 1983, Ser. No. 539,017

Claims priority, application Japan, Oct. 4, 1982, 57-174337; Oct. 19, 1982, 57-183225

Int. Cl.⁴ H04B *1/12*

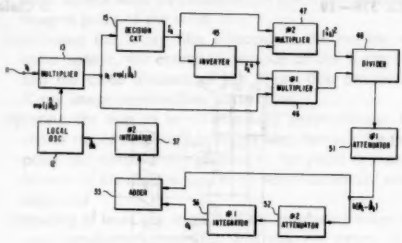
U.S. Cl. 375—10 **4 Claims**

1. A method for use in a receiver of a two-dimensional linear modulation data communication system, said receiver being responsive to a received signal received through a transmission channel of said system for producing a phase controlled baseband signal and a reproduced data signal derived from said phase controlled baseband signal, said method comprising the steps of:

measuring a quality measure of said received signal by using said phase controlled baseband signal and said reproduced data signal with said quality measure divided into portions related to a noise component, a carrier phase jitter component, and a carrier frequency offset component, each component being introduced into said received signal in said transmission channel;

using said reproduced data signal in estimating a data signal component which is influenced by an intercode interference component introduced into said received signal in said transmission channel;

subtracting said data signal component from said phase controlled baseband signal to produce a difference signal



having a phase difference relative to said data signal component;

giving said phase difference to said difference signal to produce a phase adjusted signal; and

calculating a mean square of an inphase component of said phase adjusted signal to provide that portion of said quality measure which is related to said noise component.

4,542,515

MULTILEVEL MATE PAIR CODE COMPRESSOR FOR CODES EXPANDED BY THE PROCESS OF BUTTING

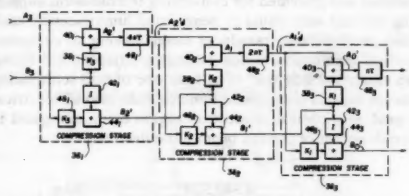
Frank S. Gutleber, Little Silver, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 14, 1983, Ser. No. 551,431

The portion of the term of this patent subsequent to Apr. 16, 2002, has been disclaimed.

Int. Cl.⁴ H03K *13/24*

U.S. Cl. 375—17 **21 Claims**



12. Apparatus for compressing a pair of expanded noise codes comprised of first and second multilevel code mates and having a predetermined number of code bits defining the code length of said code mates, comprising:

a plurality of series coupled compression stages, each stage including,

means for generating third and fourth multilevel code mates respectively comprised of first and second multi-level input code mates multiplied by a predetermined gain factor, said predetermined gain factor being non-unity for at least one said each stage of said plurality of compression stages;

means for combining said first multilevel code mate with said fourth multilevel code mate in a first manner to form a first compressed code mate having a code length one half that of the first and second multilevel input code mates;

means for combining said third multilevel code mate with said second multilevel code mate in a second manner to form a second compressed code mate also having a code length one half that of the first and second input code mates; and

means for delaying said first compressed code mate by a time delay equal to said one half expanded code length for providing a first output code mate coincident in time with said second compressed code mate, said second compressed code mate being a second output code mate.

4,542,516

ADPCM ENCODER/DECODER WITH ZERO CODE SUPPRESSION

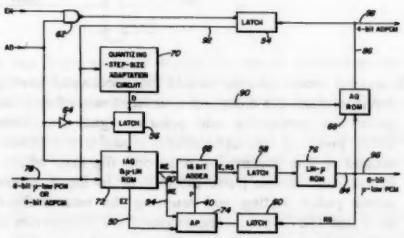
Andreas H. Weirich, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Nov. 28, 1983, Ser. No. 555,358

Claims priority, application Canada, Nov. 25, 1983, 442024

Int. Cl.⁴ H04B *12/04*

U.S. Cl. 375—30 **12 Claims**



1. An ADPCM decoder, for decoding an ADPCM signal produced by quantizing an error signal zero magnitudes of which are quantized as a predetermined non-zero ADPCM code, comprising:

an inverse quantizer for producing a reconstructed error signal from the ADPCM signal;

means for producing a reconstructed signal from the reconstructed error signal and a predicted signal;

an adaptive predictor for producing the predicted signal from the reconstructed signal and the reconstructed error signal in dependence upon predictor coefficients, the adaptive predictor including means for adapting the predictor coefficients in dependence upon a leakage function and in dependence upon the reconstructed signal and the reconstructed error signal; and

means for inhibiting adaptation of the predictor coefficients in dependence upon the reconstructed signal and the reconstructed error signal when the ADPCM signal has the predetermined non-zero ADPCM code.

4,542,517

DIGITAL SERIAL INTERFACE WITH ENCODE LOGIC FOR TRANSMISSION

Gary J. Goss, Acton; Robert G. H. Moles, Sudbury; Randall D. Hinrichs, Belmont, and Thomas O. Holtey, Newton, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Sep. 23, 1981, Ser. No. 304,755

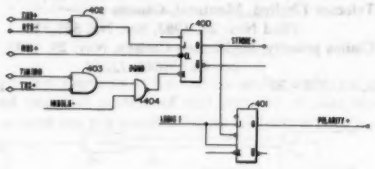
Int. Cl.⁴ H03K *13/02*

U.S. Cl. 375—36 **5 Claims**

1. An apparatus used in the transmission of electronic data pulses indicative of logic ZEROs and logic ONEs wherein a logic ZERO is represented by either a positive or negative pulse, the pulse being positive when the prior pulse encoded in negative and the pulse being negative when the prior pulse is positive, and wherein a logic ONE is represented by the absence of a pulse, said apparatus converting input data signals wherein a logic zero signal indicates a binary zero and a logic one signal indicates a binary one to a strobe pulse signal and a polarity signal and converting the strobe pulse signal and the

polarity signal to said electronic data pulses, the apparatus, for generating the strobe pulse signal and the polarity signal, comprising:

(a) first means comprising a first flip-flop, an input logic circuit and a reset logic circuit, the input logic circuit having an input terminal which receives a serial stream of said input data signals, said input logic circuit setting the first flip-flop for generating said strobe pulse responsive to each logic ZERO signal received at the input terminal and the reset logic resetting the first flip-flop to end each strobe pulse; and,



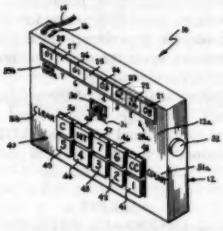
(b) second means coupled to said first means and having an input terminal for receiving a serial stream of said strobe pulses for generating said polarity signal for alternate strobe pulses of said serial stream of said strobe pulses the second means comprising a second flip-flop which receives each strobe pulse directly as an input, alternate strobe pulses setting and resetting the second flip-flop such that the output of the second flip-flop reverses state with every strobe pulse.

4,542,518

ELECTRONIC BLOOD CELL COUNTER

Thomas E. Anthony, 4128 John Goff, Watervliet, Mich. 49098

Filed Nov. 3, 1982, Ser. No. 438,643
Int. Cl.⁴ G06M *11/00*
U.S. Cl. 377—10 **6 Claims**



1. A manually operated blood cell counter comprising:

means for storing first and second numerical values;

first and second incrementing means for incrementing said first and second numerical values, respectively;

first and second manually actuated switches each including an actuated state;

oscillator means for producing a periodic signal; and

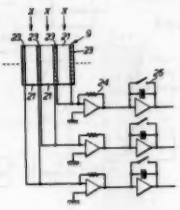
control means responsive to said switches and said oscillator means for actuating said first incrementing means once during each cycle of said periodic signal when said first switch is in said actuated state, whereby said numerical value is periodically incremented while said first switch is in said actuated state, said control means further including means responsive to said second switch for actuating both of said incrementing means once when said second switch enters said actuated state.

4,542,519

COMPUTERIZED TOMOGRAPHY APPARATUS

Hiroshi Sugimoto, Tochigi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 31, 1983, Ser. No. 462,431
Claims priority, application Japan, Feb. 1, 1982, 57-13295
Int. Cl.⁴ G03B *41/16*
U.S. Cl. 378—19 **3 Claims**



1. A computerized tomography apparatus for examining a slice of a body with radiation, comprising:

means adapted for irradiating a fan beam of radiation through the body to be examined;

means adapted for effecting relative angular displacement between the fan beam of radiation and the body;

means adapted for detecting the radiation that has passed through the body, said detecting means disposed at plural angularly spaced positions to receive at least some of fan beam emerging from the slice of the body and producing signals indicative of the intensity of radiation impinging thereon;

means for processing said signals to reconstruct an image of said slice;

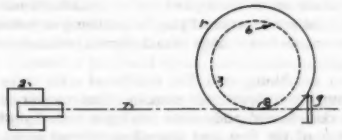
said detecting means including scintillating means and photoelectric transducer means alternately disposed in the direction of angular displacement of said fan beam to receive said fan beam, said scintillating means having elongated side walls which define a maximum dimension thereof and provided for converting the radiation impinging thereon into visual or near visual luminescence, each said photoelectric transducer means having an elongated optical connection region extending adjacent and facing an elongated side wall of at least one of said scintillating means for converting said luminescence into an electrical signal, said optical connection region being elongated in the direction of the fan beam to be detected.

4,542,520

X-RAY DETERMINATION OF PARTS ALIGNMENT

Charles W. Nelson, Boulder, Colo., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration of General Counsel-Code GP, Washington, D.C.

Filed Nov. 2, 1982, Ser. No. 438,446
Int. Cl.⁴ G03B *41/16*
U.S. Cl. 378—58 **2 Claims**



1. A method for the inspection of a thin walled pressure vessel, formed of an inner and an outer sphere each sphere comprised of a pair of hemispheres welded together around

their girths, to accurately determine any mismatch of the hemispheres of the inner sphere, said method comprising:

positioning and supporting the pressure vessel to be examined to prevent movement;

locating a point source of X-rays at an extended distance from the pressure vessel and level with the weld line of the inner sphere with the center ray of the X-ray touching the tangent point of the weld line;

positioning the X-ray film adjacent to the outside of the outer sphere, the extended distance of the X-ray source and the close distance of the X-ray film producing an X-ray image approaching actual size;

squaring the film to be substantially perpendicular to the center ray of the X-ray beam passing through the tangent point and substantially parallel to the plane of maximum interest of the inner sphere to preserve the spatial relationship; and

extending at least one surface of the produced image of the two curvilinear structures whereby the extent of nonalignment can be determined from the gap between the two surfaces.

4,542,521
RADIOGRAPHIC INSTALLATION FOR AN X-RAY EXAMINATION APPARATUS

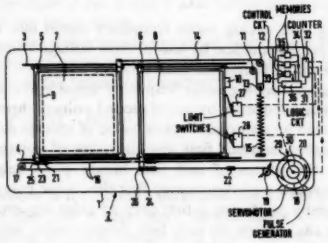
Alfred Hahn, Erlangen; Werner Rauch, Nuremberg, and Norbert Barthelmes, Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 18, 1983, Ser. No. 514,702

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1982, 3236081

Int. Cl.⁴ A61B *6/00*

U.S. Cl. 378—155 **7 Claims**



1. A radiographic installation for an x-ray examination apparatus having a radiation field comprising:

two antiscatter grids;

means supporting said antiscatter grids in two substantially parallel planes and permitting lateral movement of said grids in said respective planes from a standby position outside of said radiation field to a position within said radiation field;

bias means connected to each of said grids for permanently applying a force thereto urging said grids into said standby position; and

drive means having a single cable engageable with each of said grids for displacing said grids counter to said force from said standby position to said position within said radiation field.

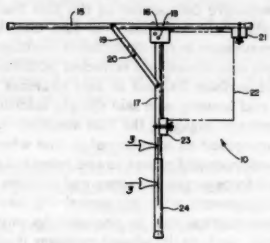
4,542,522
AN X-RAY FILM CASSETTE HOLDER

Gilbert L. Blais, 544 Cherrington Rd., Westerville, Ohio 43081

Filed Dec. 7, 1983, Ser. No. 559,159

Int. Cl.⁴ G01M *21/00*; H05G *1/62*; A47F *7/16, 5/12*

U.S. Cl. 378—167 **4 Claims**



1. An X-ray cassette holder for use in examining the leg injuries of large animals comprising

a first member adapted to receive two corners of said cassette,

a second member hingedly connected to said first member and adapted to receive one of the corners of said cassette held by said first member and an adjacent corner of said cassette,

means adjustable to position said first and second members in essentially parallel relationship and alternatively to position them at right angles to one another,

means for temporarily fixedly securing sand first and second members at right angles to one another, and

means to adjust the length of said second member.

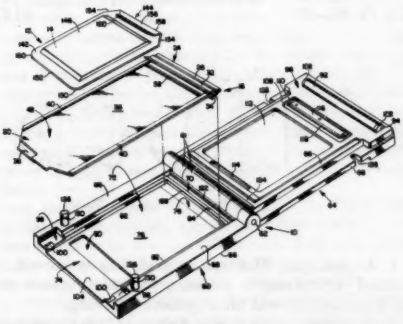
4,542,523
RADIOGRAPHIC INTENSIFYING SCREEN MANIPULATOR

Herman E. Erikson, Winchester, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed May 17, 1982, Ser. No. 378,766

Int. Cl.⁴ G03B *41/16*

U.S. Cl. 378—167 **21 Claims**



1. Radiographic apparatus, usable with a film assembly including a photosensitive component and a retractable opaque cover envelope, for selectively inserting a radiographic element into the envelope and also removing it therefrom, said apparatus comprising:

a carrier having such a radiographic element thereon;

a housing having a light excluding chamber therein for receiving such a film assembly and said carrier arranged in superposed relation therewith while providing access to

the envelope for moving it between a closed position covering a photosensitive portion of the photosensitive component and a retracted position wherein said photosensitive portion is uncovered, said housing being configured for operation in an upright insertion position and, alternatively, in an inverted removal position;

means for releasably retaining trailing end portions of the photosensitive component of the film assembly and said superposed carrier located in said chamber to prevent their movement in the direction of envelope displacement between said closed and retracted positions;

a support surface, located in said chamber and operative when said housing is in said upright insertion position, for supportively engaging the film assembly having said carrier superposed on top thereof so that when the envelope is moved from said closed to said retracted position, gravitational force urges a leading end portion of said carrier into engagement with the underlying uncovered photosensitive portion and in response to movement of the envelope back to its closed position it slides over and encloses both said carrier and photosensitive portion to effect insertion of the radiographic element into said envelope; and

means, operative during removal operations when said housing is in its said inverted position to locate said carrier in the envelope below said photosensitive portion, for supporting at least a leading end of the photosensitive portion such that after the envelope is moved to its said retracted position, gravitational force urges said leading end portion of said carrier away from the photosensitive portion allowing the envelope to pass therebetween as it is moved back to its closed position, thereby enclosing the photosensitive portion and leaving said carrier outside of the envelope to effect removal of said radiographic element.

4,542,524

MODEL AND FILTER CIRCUIT FOR MODELING AN ACOUSTIC SOUND CHANNEL, USES OF THE MODEL, AND SPEECH SYNTHESIZER APPLYING THE MODEL

Unto Laine, Tampere, Finland, assignor to Euroka Oy, Finland

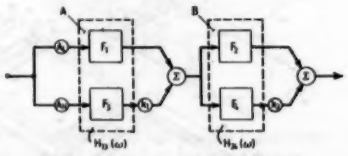
PCT No. PCT/FI81/00091, § 371 Date Aug. 11, 1982, § 102(e) Date Aug. 11, 1982, PCT Pub. No. WO82/02109, PCT Pub. Date Jun. 24, 1982

PCT Filed Dec. 15, 1981, Ser. No. 413,342

Claims priority, application Finland, Dec. 16, 1980, 803928

Int. Cl.⁴ G10L *1/00*

U.S. Cl. 381—53 **11 Claims**



1. An electronic filter system modelling an acoustic sound channel conforming to a human phonation system or to a music instrument, said filter system comprising

filter elements, each having a rational function approximating a partial transfer function Hij computed by decomposing the acoustic transfer function of a homogeneous sound channel

$$H_A = \frac{1}{\cos x + ja \sin x}$$

into n partial transfer functions Hij (i=1 . . . n,j=n+1 . . . 2n) comprising only the ith, (i+n)th, (i+2n)th, . . . format of H_A, said filter elements comprising formant circuits; and

connecting means connecting said formant circuits in a manner whereby formant circuits with formants mutually adjacent in frequency are in cascade with each other.

4,542,525

METHOD AND APPARATUS FOR CLASSIFYING AUDIO SIGNALS

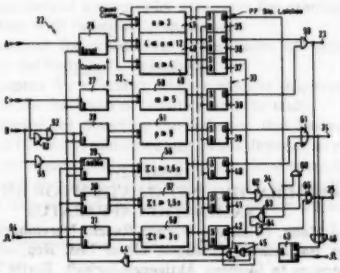
Reinhard Hopf, Bamberg, Fed. Rep. of Germany, assignor to Blaupunkt-Werke GmbH, Hildesheim, Fed. Rep. of Germany

Filed Sep. 27, 1983, Ser. No. 536,213

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1982, 3236000

Int. Cl.⁴ H04R *29/00*

U.S. Cl. 381—56 **28 Claims**



1. Method of automatic classification of audio signals based on conversion of the null transitions of an analog audio frequency signal into at least one pulse sequence by reference to voltage thresholds determined by an absolute value of voltage difference from the null value of the analog signal, comprising the steps of:

converting said analog audio frequency signal into a first binary pulse sequence by use of first voltage thresholds determined by a first absolute value of voltage;

converting said analog audio frequency signal into a second binary pulse sequence by use of second voltage thresholds determined by a second absolute value of voltage substantially higher than said first absolute value of voltage;

detecting the pauses of said first binary pulse sequence which exceed a predetermined first time lapse magnitude and thereby producing a first derived pulse sequence;

detecting the pauses of said first binary pulse sequence which exceed a predetermined second time lapse magnitude which is substantially greater than said first time lapse magnitude and thereby producing a second derived pulse sequence;

detecting the pauses of said second binary pulse sequence which exceed a predetermined third time lapse magnitude which is at least about the same magnitude as said second time lapse magnitude and thereby producing a third derived pulse sequence;

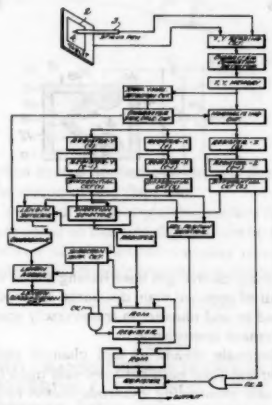
determined whether said audio-frequency signal is a speech signal, a music signal or an unidentifiable kind of signal from said derived pulse sequences, by pause count and by simultaneity and/or alternation of pauses detected by said pulse sequences respectively derived from said first and second binary pulse sequences, and

preparing readiness for repetition of said method when said determining step is completed.

4,542,526
CHARACTER RECOGNITION APPARATUS

Koji Satoh; Akihiro Ooka, and Yutaka Wada, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Oct. 20, 1983, Ser. No. 543,817
Claims priority, application Japan, Oct. 21, 1982, 57-185839
Int. Cl.[4] G06K 9/22
U.S. Cl. 382—13 3 Claims



1. A character recognition apparatus for identifying a character from data in detecting the positional movement of a stylus with respect to a tablet defining relative position with detection means in terms of X, Y and Z coordinate axes, comprising:

detection circuit means for detecting the initiation and completion of the movement of said pen for writing said character by detectinq a change of the position of the pen on the Z-coordinate axis normal to the surface of the tablet and by comparing the difference of two pen positions in the plane of the X and Y axes before and after the change of the pen position;

character size normalizing circuit means for normalizing the size of written characters by processing said data according to the following equations:

$$X' = C\,(X_t - X\min) \div A \tag{1}$$

$$Y' = C\,(Y_t - Y\min) \div B \tag{2}$$

where A represents a maximum shift of the pen along the X-axis and B represents the maximum shift of the pen along the Y-coordinate axis, C is a desired character size after normalization, X'_t, Y_t are coordinates of the pen position on the X and Y axes, respectively, Xmin, Ymin are the minimum value of the position of the pen for writing one character on the X and Y axes, respectively, and X' and Y' are transformed coordinates after the normalization;

calculating circuit means for calculating gradient θ and length L of a line segment of a stroke of a character by processing data on the pen position upon writing according to the following equations:

$$A = X'_t - X'_{t-1} \tag{3}$$

$$B = Y_t - Y_{t-1} \tag{4}$$

$$\mathrm{Tan}\theta = B \div A \tag{5}$$

$$L = \sqrt{a^2 + b^2} \tag{8}$$

where X'_t, X'_{t-1} are transformed X-coordinates taken at the time t, and t−1, respectively, and Y'_t, Y'_{t-1} are also transformed Y-coordinates taken at times t and t−1;

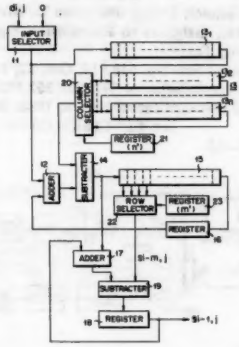
determination means for extracting distinction of a stroke of a character by order of occurrence of θ and L of line segment(s) of a stroke; and

character recognition circuit means for recognizing character by combination in terms of the order or occurrence of the distinctions of strokes.

4,542,527
IMAGE PROCESSING DEVICE FOR CONTINUOUSLY EXTRACTING FEATURES OF SMALL REGIONS OF AN IMAGE

Shou Tsunekawa, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 13, 1983, Ser. No. 494,254
Claims priority, application Japan, May 17, 1982, 57-82669; May 17, 1982, 57-82671
Int. Cl.[4] G06K 9/36
U.S. Cl. 382—52 7 Claims



1. An image data processing device for extracting a feature of a small region of an image, comprising:

first memory means connected to sequentially receive input picture element data obtained by two-dimensional scanning of the image of temporarily storing the data, said first memory means having (M×n) stages to temporarily store (M×n) picture element data on n scanning lines, the (M×n) picture element data stored being sequentially read out of said first memory means in the order of application of said picture element data to said first memory means;

second memory means having M stages for temporarily storing data sequentially applied to an input thereof, the M data stored being read out of said second memory means in the order of application of data thereto;

first arithmetic operation circuit means for effecting an arithmetic operation of the input picture element data plus the output data of said second memory means minus the output data of said first memory means and thereby producing output data that is coupled to the input of said second memory means;

third memory means for temporarily storing data applied to an input thereof; and

second arithmetic operation circuit means for effecting an arithmetic operation of the output data of said first arithmetic operation circuit means plus output data of said third memory means minus output data of m (<M)-th

stage of said second memory means and thereby producing output data that is coupled to the input of said third memory means;

means for changeably selecting one of multiples of M)-th stage of said first memory means and coupling, as the output data of said first memory means, output data of the selected stage to said first arithmetic operation circuit means; and

means for changeably selecting one of a plurality of stages of said second memory means and coupling, as the output data of said second memory means, output data of the selected stage to said second arithmetic operation circuit means.

4,542,528

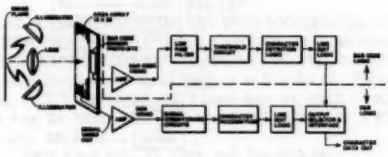
OCR AND BAR CODE READER WITH OPTIMIZED SENSOR

Medford D. Sanner, Irving, and Lynn D. McWaters, Garland, both of Tex., assignors to Recognition Equipment Incorporated, Irving, Tex.

Continuation of Ser. No. 540,912, Oct. 12, 1983, abandoned, which is a continuation of Ser. No. 252,555, Apr. 9, 1981, abandoned. This application Nov. 6, 1984, Ser. No. 669,049

Int. Cl.[4] G06K *9/28*

U.S. Cl. 382—62 **3 Claims**



1. A hand held optical reader for scanning and reading alphanumeric and bar code data and distinguishing between each and utilizing a common lens and illumination system for reading both alphanumeric and bar code data, comprising:

an optical area array of photosensors having a plurality of columns of photosensors disposed on a substrate for scanning one face of a document and for producing electrical signals representative of data scanned from the document;

a single rectangular photosensor disposed on said substrate, adjacent to and spaced apart from said optical area array of photosensors at a site outside said optical area array for scanning one face of the document and for producing electrical signals representative of data scanned from the document;

a first processor connected to said area array of photosensors for receiving said electrical signals from said area array of photosensors and producing an output representative of any alphanumeric data scanned;

a second processor connected to said single rectangular photosensor for receiving said electrical signals from said single rectangular photosensor and producing an output representative of any bar code data scanned; and

an output selector means connected to said first processor and to said second processor for outputting data from either the output of said first processor or the output of said second processor, but not both.

4,542,529

PREIONIZING ARRANGEMENT FOR TRANSVERSELY EXCITED LASERS

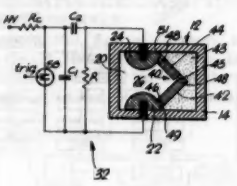
Paul W. Pace, Neufchâtel; Pierre R. Mathieu, Quebec, and James M. Cruickshank, Ancienne-Lorette, all of Canada, assignors to Her Majesty the Queen in right of Canada, Ottawa, Canada

Filed Nov. 19, 1982, Ser. No. 443,013

Claims priority, application Canada, Apr. 13, 1982, 400828

Int. Cl.[4] H01S *3/097*

U.S. Cl. 372—86 **12 Claims**



1. In a transversely excited gas laser having a laser discharge channel and a pair of opposed main discharge electrodes longitudinally disposed in said channel in transversely spaced relation, the improvement comprising:

preionizing electrode means in said channel defining an electrical current flow path between said main discharge electrodes, said preionizing electrode means including at least one pair of elongated electrode plates substantially coextensive with said main electrodes, each said plate being disposed longitudinally in said channel in juxtaposition with one another and said main electrodes and at an angle to one another so as to provide a longitudinal plate-electrode discharge gap between each said plate and one of said main discharge electrodes and a longitudinal inter-plate discharge gap between said plates;

said electrode plates being formed of a semiconductive material characterized by a relatively high impedance at relatively low voltages and a rapidly decreasing impedance at increasing voltages beyond a breakdown voltage such that upon application of a high energy, high voltage electrical pulse to said main electrodes and said preionizing electrode means, the electrical impedance of said preionizing electrode means drops below the impedance of lasing material in said channel whereby electrical current initially flows through said preionizing electrode plates and produces a longitudinal, filamentary discharge along each said gap, which discharges serve to precondition said lasing material within said channel.

4,542,530

FLEXIBLE CONTAINER WITH RESEALABLE OPENING

Geoffrey Thomas, and Charalambos G. Kalkipsakis, both of Auburn, Australia, assignors to Wrighteel Limited, Auburn, Australia

Filed Jan. 4, 1982, Ser. No. 336,954

Claims priority, application Australia, Jan. 7, 1981, PE7160

Int. Cl.[4] B65D *33/16*

U.S. Cl. 383—66 **2 Claims**

1. A flexible container comprising:

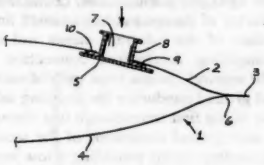
(a) a collar affixed by a flange to a wall of said flexible container, said collar providing an opening into said flexible container for filling said container and for receiving a dispensing means after said container is filled; and,

(b) a flap attached within said flexible container, said attachment being to or near said flange, so that said flap is over said opening in said collar and a fluid tight seal over said opening can be made, said flap including:

(i) a first surface region which can be brought into contact with said flange, said flange including a first region for

providing a temporary seal around said opening with said first surface region on said flap;

(ii) a second surface region which can be brought into contact with said flange, said flange including a second region for providing a fluid tight heat seal around said opening with said second surface region on said flap



when heat is applied outside said flexible container in the region of said flap; and,

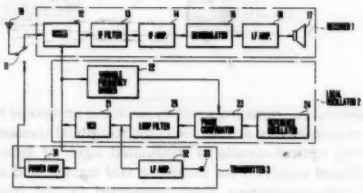
(iii) a second non-heat sealable surface facing away from said collar so that said flap will not be heat sealed to the interior of said flexible container when heat is applied outside said flexible container in the region of said flap.

4,542,531

RADIO TRANSMITTER/RECEIVERS WITH NON INTERFERRING LOCAL OSCILLATOR FREQUENCY

Yukio Fukumura, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Mar. 15, 1983, Ser. No. 475,539
Claims priority, application Japan, Mar. 18, 1982, 57-43966
Int. Cl.⁴ H04B *1/40*
U.S. Cl. 455—76 **3 Claims**



1. A radio transmitter/receiver comprising:

a transmitter;

a superheterodyne receiver, and

a local oscillator for supplying said transmitter and receiver with local signals at a plurality of frequencies;

said transmitter and receiver operation on a plurality of radio channels with different transmission and reception frequencies for each channel said transmission and reception frequencies being a natural number multiple of the frequency spacing between said radio channels and the output frequencies of said local oscillator being between the transmission frequencies of two adjacent channels

mixing means in said receiver for mixing an output from said local oscillator with a reception frequency to provide an intermediate frequency f_{if} wherein said intermediate frequency f_{if} of said superheterodyne receiver is set to have a value expressed by

$$f_{if}=(2K-1)\times f_{ch}/2$$

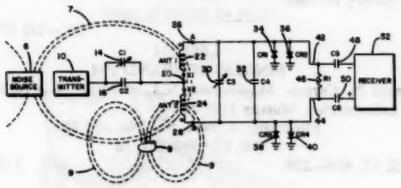
where f_{ch} represents a frequency spacing between radio frequencies assigned to adjacent channels, and K represents a natural number.

4,542,532

DUAL-ANTENNA TRANSCEIVER

Gary L. McQuilkin, New Hope, Minn., assignor to Medtronic, Inc., Minneapolis, Mich.

Filed Mar. 9, 1984, Ser. No. 587,754
Int. Cl.⁴ H04B *1/44*
U.S. Cl. 455—78 **10 Claims**



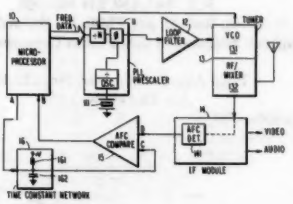
1. A dual-antenna transceiver comprising receiving means, transmitting means, first and second inductive means wound in series-opposition and coupled to a junction point, first capacitive means coupled between said transmitting means and said junction point wherein said first and second inductive means and said first capacitive means form a series resonant frequency at the transmission frequency of said transmitting means, said first inductive means being coupled to a first output point and said second inductive means being coupled to a second output point, and second capacitive means coupled across said first and second output points to form a parallel-resonant circuit with said first and second inductive means at the receiving frequency of said receiving means, said receiving means being coupled to said parallel-resonant circuit.

4,542,533

TUNING SYSTEM WITH AUTOMATIC FREQUENCY CONTROL

James S. Parker, Portsmouth, Va., assignor to General Electric Company, Portsmouth, Va.

Filed Apr. 27, 1984, Ser. No. 604,566
Int. Cl.⁴ H04B *1/26*
U.S. Cl. 455—182 **3 Claims**



1. In a microprocessor controlled phase locked loop tuning system of the type wherein the microprocessor is responsive to an output frequency selection to produce an output to a programmable frequency divider in the phase locked loop which determines the nominal local oscillator frequency and the intermediate frequency of the tuning system is detected to produce an error voltage indicative of the deviation of the intermediate frequency from a nominal value, the improvement comprising:

AFC comparator means having first and second inputs and an output, said first input being connected to receive said error voltage and said output being connected to an input port of said microprocessor, the output of said AFC comparator means being in a first state when the voltage at said second input is less than the voltage at said first input; and

time constant means controlled by said microprocessor and connected to said second input of said AFC comparator means for providing an increasing voltage to said second

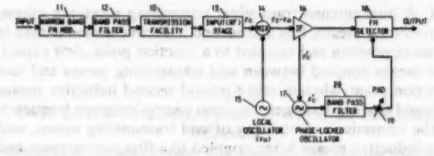
input, said microprocessor being programmed to alternately increment an internal register and sample the output of said AFC comparator means until said output changes from said first state to a second state indicating that the voltage from said time constant means exceeds said error voltage, the number in said internal register then being a digital representation of said error voltage which can be used by said microprocessor to modify said output to said programmable frequency divider.

4,542,534

SINGLE-SIDEBAND FM

David N. Carson, Maplewood, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 2, 1984, Ser. No. 585,454
Int. Cl.[4] H04B 1/16
U.S. Cl. 455—208 2 Claims



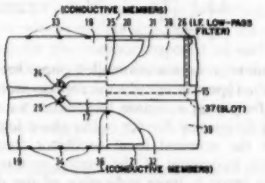
1. In a single-sideband FM receiver for receiving a single sideband signal from a FM transmitter which comprises an input stage, a mixer stage, an IF amplifier and an FM detector coupled in tandem, said receiver being characterized by phase-locked oscillator means coupled to the IF amplifier for producing a phase-locked carrier signal which is equivalent in phase and frequency to the carrier signal at the output of the IF amplifier, and amplitude control means for coupling the signal from the phase-locked oscillator means to said FM detector, said control means serving to control the amplitude of the phase-locked carrier signal injected into said FM detector to thereby reduce harmonic distortion of the output of said FM detector to a predetermined value.

4,542,535

R.F. BALANCED MIXER

Robert N. Bates, Redhill, and Philip M. Ballard, Crawley, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 8, 1983, Ser. No. 521,492
Int. Cl.[4] H04B 1/26
U.S. Cl. 455—327 7 Claims



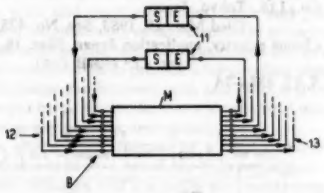
1. An R.F. balanced mixer comprising insulating substrate means having two opposed major surfaces, the mixer having first and second transmission lines, wherein the first transmission line is a balanced transmission line comprising a pair of spaced conductors on a first of said major surfaces, wherein the second transmission line is an unbalanced transmission line comprising a strip conductor on one of said major surfaces and a ground conductor on the other major surface, the mixer further comprising two diodes electrically connected between said strip conductor of the second transmission line and respective ones of the spaced conductors of the first transmission line, the arrangement of the first and second transmission lines and the diodes being operable as a 180 degree hybrid junction, wherein in operation the first transmission line couples a signal at a first frequency to or from the diodes, and wherein in operation the second transmission line couples a signal at a second frequency to the diodes and couples a signal at a third frequency equal to the difference between the first and second frequencies to or from the diodes, characterized in that said strip conductor of the second transmission line is on said first major surface of the substrate means and in that coupling means comprising conductive connection means extends through the substrate means from each of said spaced conductors to said ground conductor for coupling said pair of spaced conductors of the first transmission line through the substrate means to said ground conductor of the second transmission line, said coupling means providing a low impedance ground return path at said second and third frequencies.

4,542,536

DEVICE AND METHOD FOR REDUCING LEVEL DYNAMICS IN AN OPTICAL TRANSMISSION SYSTEM

Steven Moustakas, and Hans Witte, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 3, 1983, Ser. No. 463,486
Claims priority, application Fed. Rep. of Germany, Feb. 4, 1982, 3203828
Int. Cl.[4] H04B 9/00
U.S. Cl. 455—607 3 Claims



1. A method for reducing level dynamics in an optical transmission system having at least two electro-optical transmitters for sending optical signals of modulated light, at least two opto-electrical receivers for receiving said signals, and a plurality of light-conducting fibers connected to and from an optical star bus for carrying said signals from said transmitters to said receivers, said signals normally arriving at said receivers at different power levels, and said receivers, for a given received optical power level, generating a corresponding electrical output level at a given point in the receiver which may differ from receiver to receiver in comparison to one another, said method comprising the steps of:

providing selectively adjustable means in each of said transmitters for controlling an output optical power level of each of said transmitters;

providing selectively adjustable means in each of said receivers for controlling the electrical output level at said given point in each of said receivers;

adjusting said adjustable means in each of said transmitters so that at a selected receiver each of the transmitters generates the same electrical output level; and

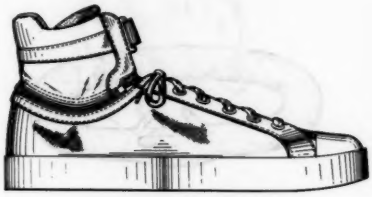
thereafter adjusting said adjustable means in each of said receivers so that when one specific transmitter which was previously adjusted is transmitting optical power into the system, the same electrical output level at said given point in said selected receiver is provided at said given point in all of the other receivers;

whereby level dynamics of signals received at any of the receivers relative to the other receivers when any one of the transmitters is transmitting is substantially reduced.

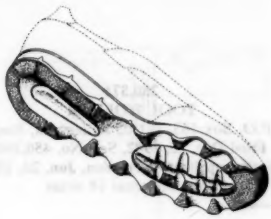
280,565
MEDICAL GARMENT OR THE LIKE
Robert B. Winslow, Wake Forest, N.C., assignor to Barbara S. Beck, Raleigh, N.C.
Filed Jul. 5, 1983, Ser. No. 510,578
Term of patent 14 years
U.S. Cl. D2—6

280,566
MOLDED CAP
James H. Schwartzburg, Douglas County, Kans., assignor to Packer Plastics, Inc., Lawrence, Kans.
Filed Jul. 29, 1983, Ser. No. 518,695
Term of patent 14 years
U.S. Cl. D2—244

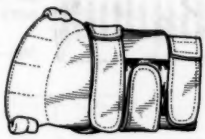
280,567
COMBINATION SHOE
Kyung W. Ji, Pusan, Rep. of Korea, assignor to Kukje America Corp., Rutherford, N.J.
Filed Mar. 7, 1983, Ser. No. 473,117
Term of patent 14 years
U.S. Cl. D2—310



280,568
SHOE SOLE
Jerry D. Stubblefield, Portland, Oreg., assignor to Pensa, Inc., Portland, Oreg.
Filed Nov. 15, 1983, Ser. No. 551,895
Term of patent 14 years
U.S. Cl. D2—320

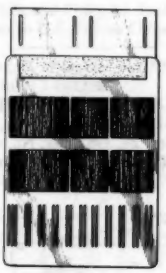


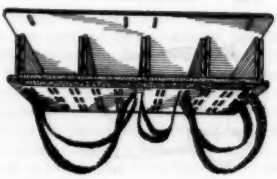
280,569
PROTECTIVE GLOVE FOR A FOOTBALL PLAYER
John C. Paulson, 1425 S. 100 West, Orem, Utah 84057
Filed Sep. 29, 1982, Ser. No. 427,351
Term of patent 14 years
U.S. Cl. D2—361



280,570
SASH
Tina M. Stanley, and Mark T. Roberts, both of 1200 Newell Hill Pl., #206, Walnut Creek, Calif. 94596
Filed Feb. 1, 1983, Ser. No. 463,036
Term of patent 14 years
U.S. Cl. D2—385

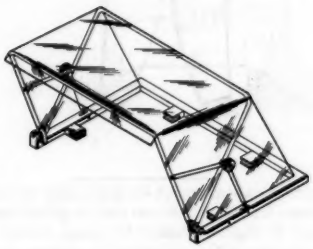
280,571
TOOL HOLDER
Matti Viio, P.O. Box 563, 191 05 Sollentuna, Sweden
Filed Dec. 15, 1982, Ser. No. 450,104
Claims priority, application Sweden, Jun. 23, 1982, 821664
Term of patent 14 years
U.S. Cl. D2—400





280,572
COMBINED TIE HOLDER AND SLEEVE THEREFOR
Henricus F. Koppelmans, 8 Valkenstraat, 5811 EZ Breda, Netherlands
Filed Aug. 12, 1982, Ser. No. 407,701
Term of patent 14 years
U.S. Cl. D2—401

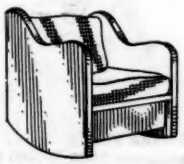
280,573
INCLEMENT WEATHER HOOD FOR A STRETCHER OF LITTER OR THE LIKE
Robert Barton, 7 Madison Ave., Lake Hiawatha, N.Y. 07034
Filed Jun. 20, 1983, Ser. No. 505,932
Term of patent 14 years
U.S. Cl. D3—5



280,574
MIRROR
Nicholas S. Kladitis, 1636 Ridge Ave., Sharpsville, Pa. 16150
Filed Feb. 16, 1982, Ser. No. 348,732
Term of patent 14 years
U.S. Cl. D6—300

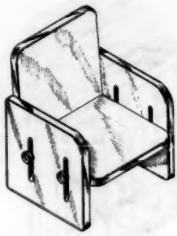
280,575
EXTENDABLE TIE RACK HOUSING
Charles E. Benedict, Tallahassee, Fla., assignor to Telescoping Tie Racks, Inc., White Haven, Fla.
Continuation-in-part of Ser. No. 453,052, Dec. 27, 1982, Pat. No. Des. 277,248. This application Oct. 12, 1984, Ser. No. 660,162
Term of patent 14 years
U.S. Cl. D6—324

280,576
ROCKING CHAIR
Dennis J. Palmer, 555 Irene St., Platteville, Wis. 53818
Filed May 5, 1983, Ser. No. 491,874
Term of patent 14 years
U.S. Cl. D6—344

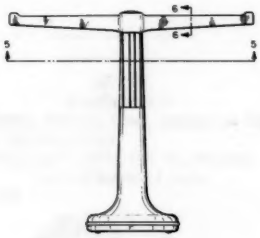


280,577
CHAIR
Matthew R. Oscar, 2566 Hyacinth St., Westbury, N.Y. 11590
Filed May 23, 1983, Ser. No. 497,129
Term of patent 14 years
U.S. Cl. D6—359

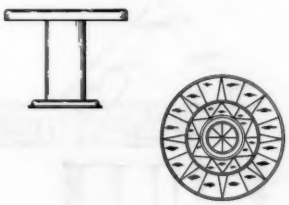
280,578
ADJUSTABLE BOOSTER SEAT
Daniel L. Holden, 10773 Jeff La., Cincinnati, Ohio 45241
Filed Dec. 9, 1982, Ser. No. 448,108
Term of patent 14 years
U.S. Cl. D6—367



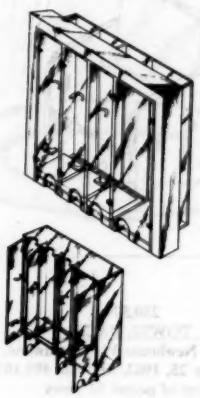
280,579
TOWEL RACK
Jerry A. Brown, 3546 Newhouse Pl., Greenwood, Ind. 46142
Filed May 25, 1983, Ser. No. 498,107
Term of patent 14 years
U.S. Cl. D6—410



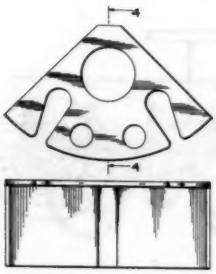
280,580
CHILD'S TABLE
Mel Appel, Nine Nottingham Rd., Livingston, N.J. 07039, and George Kress, Scotch Plains, N.J., assignors to Mel Appel, Livingston, N.J.
Filed May 21, 1982, Ser. No. 380,684
Term of patent 14 years
U.S. Cl. D6—486



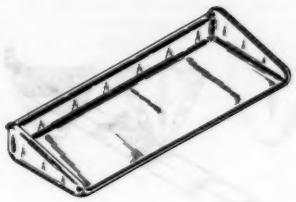
280,581
CONTAINER FOR TOOTHPASTE AND TOOTHBRUSHES
James Altadonna, 90 E. 2nd St., Deer Park, N.Y. 11729
Filed Nov. 5, 1982, Ser. No. 400,642
Term of patent 14 years
U.S. Cl. D6—528



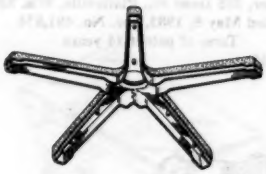
280,582
CORNER BRACKET FOR USE IN BEAUTY SALONS, HOMES AND THE LIKE
Andrea F. DelGarbino, and David L. DelGarbino, both of 2120 Arms Dr., Girard, Ohio 44420
Filed Nov. 9, 1983, Ser. No. 550,112
Term of patent 14 years
U.S. Cl. D6—562



280,583
SHELF
Mel Evenson, San Pedro, Calif., assignor to Eldon Industries, Inc., Inglewood, Calif.
Filed Aug. 23, 1982, Ser. No. 410,264
Term of patent 14 years
U.S. Cl. D6—574

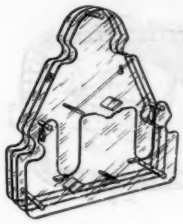


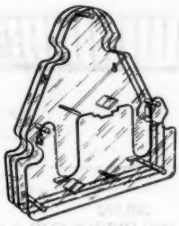
280,584
COVER FOR A CHAIR BASE
Robert Harnick, N. Miami Beach, Fla., assignor to Metal Stand Company, Philadelphia, Pa.
Filed Dec. 27, 1982, Ser. No. 453,409
Term of patent 14 years
U.S. Cl. D6—610

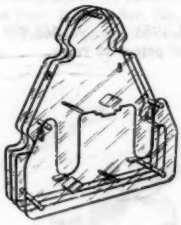


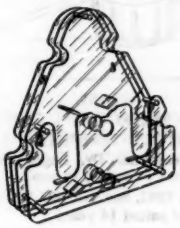
280,585
DINNER PLATE
Walter Everhan, Weisshausstrasse 34-38, D-5000 Kohn 41, Fed. Rep. of Germany
Filed Nov. 3, 1982, Ser. No. 438,982
Term of patent 14 years
U.S. Cl. D7—30

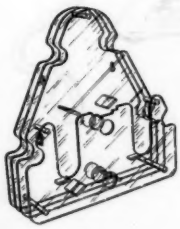
280,586
FOOD PROCESSOR TOOL HOLDER
Hans K. Wallenwein, 98 Grandview Ave., Thornhill, Ontario, Canada L3T 1H6
Filed Jan. 11, 1983, Ser. No. 436,563
Term of patent 14 years
U.S. Cl. D7—74



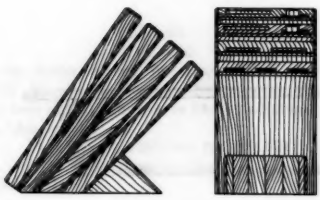






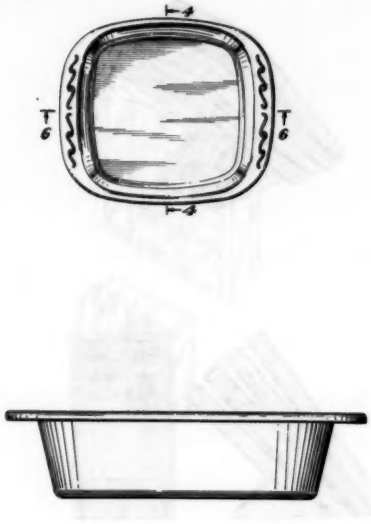


280,587
KNIFE BLOCK
Casey Carlson, St. Paul, Minn., assignor to Chicago Cutlery Consumer Products, Inc., Minneapolis, Minn.
Filed Apr. 20, 1983, Ser. No. 486,693
Term of patent 14 years
U.S. Cl. D7—74

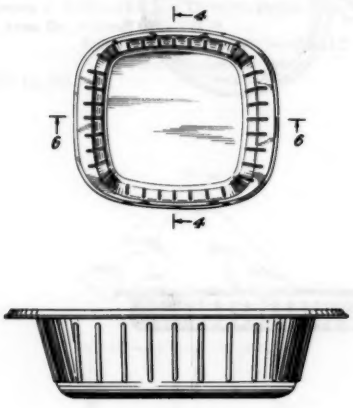


280,588
CASSEROLE
Franklin E. Schrage, Monroe, Conn., assignor to Union Carbide Corporation, Danbury, Conn.
Filed Apr. 7, 1983, Ser. No. 482,938
Term of patent 14 years
U.S. Cl. D7—354

280,589
CASSEROLE
Howard D. Bassett, Downers Grove, Ill., assignor to Union Carbide Corporation, Danbury, Conn.
Filed Mar. 31, 1983, Ser. No. 481,040
Term of patent 14 years
U.S. Cl. D7—360

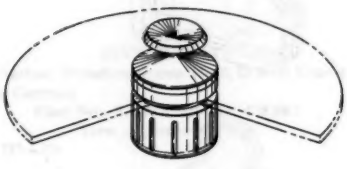


280,590
CASSEROLE
Franklin E. Schrage, Monroe, Conn., assignor to Union Carbide Corporation, Danbury, Conn.
Filed May 19, 1983, Ser. No. 496,265
Term of patent 14 years
U.S. Cl. D7—360



280,591
CASSEROLE
Franklin E. Schrage, Monroe, Conn., assignor to Union Carbide Corporation, Danbury, Conn.
Filed May 19, 1983, Ser. No. 496,272
Term of patent 14 years
U.S. Cl. D7—360

280,592
AUDIBLE SIGNALING DEVICE FOR A COOKING UTENSIL
Edward J. Duquaine, Jr., West Bend, Wis., and David L. Painter, Glenview, Ill., assignors to Hy Cite Corporation, Madison, Wis.
Filed Feb. 14, 1983, Ser. No. 465,980
Term of patent 14 years
U.S. Cl. D7—387

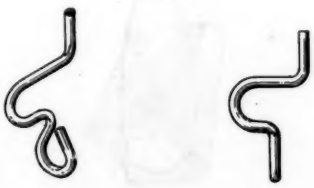


280,593
TILE CONTOUR TEMPLATE
Mervin C. Kendall, 945 Rembrandt Dr., Laguna Beach, Calif. 92651
Filed Sep. 30, 1982, Ser. No. 431,132
Term of patent 14 years
U.S. Cl. D8—14

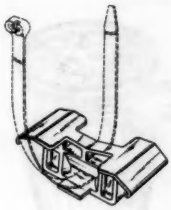
280,594
BOTTLE CAP OPENER
Glen W. Dow, 1 Stickney Ave., Newburyport, Mass. 01950
Filed Sep. 19, 1983, Ser. No. 533,284
Term of patent 14 years
U.S. Cl. D8—40

280,595
ARTICLE SUPPORTING BAR
John J. Wilk, 608 Longwood Ct., Glenwood, Ill. 60425
Filed Mar. 2, 1983, Ser. No. 460,180
Term of patent 14 years
U.S. Cl. D8—354

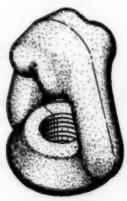
280,596
SECURITY PEG BOARD FASTENER
John N. Keeler, 27333 Ellington Rd., Westlake, Ohio 44145
Filed Nov. 1, 1982, Ser. No. 438,007
Term of patent 14 years
U.S. Cl. D8—382



280,597
CLAMPING BASE FOR CABLE CLAMPS OR THE LIKE
William A. Fortsch, Bernardsville, N.J., assignor to Thomas & Betts Corporation, Raritan, N.J.
Filed Feb. 14, 1983, Ser. No. 466,394
Term of patent 14 years
U.S. Cl. D8—396



280,598
EYENUT
Jonathan D. Serfas, Stroud Township, Monroe County, and Richard C. Sawyer, Jr., Chestnut Hill Township, Philadelphia County, both of Pa., assignors to McGraw-Edison Company, Rolling Meadows, Ill.
Filed Aug. 8, 1983, Ser. No. 521,160
Term of patent 14 years
U.S. Cl. D8—397



280,599
TWIN COMPARTMENT BOTTLE
Richard D. Green, 1150 18th St. Ste. 101, Santa Monica, Calif. 90403
Filed Aug. 26, 1983, Ser. No. 526,659
Term of patent 14 years
U.S. Cl. D9—341

280,600

COMBINED PACKAGING CUP AND LID THEREFOR

John W. Earl, Stockbridge, Mich., assignor to Dart Container Corporation, Mason, Mich.

Filed Sep. 30, 1982, Ser. No. 431,706

Term of patent 14 years

U.S. Cl. D9—352

280,601

BOTTLE OR THE LIKE

Frederick N. Biesecker, Boyertown, Pa., assignor to Drug Plastics & Glass Company, Inc., Boyertown, Pa.

Filed May 6, 1983, Ser. No. 492,090

Term of patent 14 years

U.S. Cl. D9—372

280,602

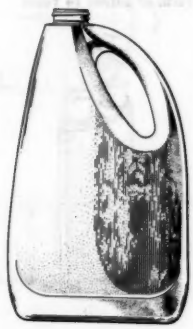
BOTTLE

G. Edward Campbell, Pleasanton, Calif., and Theodore L. Beaver, Roselle, Ill., assignors to The Chlorox Company, Oakland, Calif.

Filed Jun. 27, 1983, Ser. No. 508,205

Term of patent 14 years

U.S. Cl. D9—376



280,603

COMBINED BOTTLE AND CAP

Anthony W. Johnson, Cheshire, and David Lea, Manchester, both of England, assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Sep. 13, 1982, Ser. No. 417,711

Claims priority, application United Kingdom, Oct. 12, 1982, 1005612; Oct. 12, 1982, 1005613

Term of patent 14 years

U.S. Cl. D9—389

280,604

COMBINED BOTTLE AND CAP

Anthony W. Johnson, Cheshire, and David Lea, Manchester, both of England, assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Sep. 13, 1982, Ser. No. 417,712

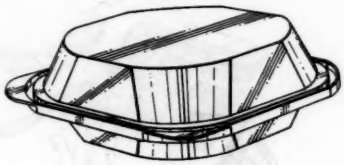
Claims priority, application United Kingdom, Oct. 11, 1982, 1005610; Oct. 12, 1982, 1005611

The portion of the term of this patent subsequent to Sep. 17, 1999, has been disclaimed.

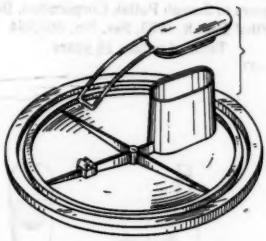
Term of patent 14 years

U.S. Cl. D9—389

280,605
PACKAGING CONTAINER
John Karlik, New South Wales, Australia, assignor to Thomas J. Lipton Inc., Englewood Cliffs, N.J.
Filed Apr. 12, 1983, Ser. No. 484,392
Claims priority, application Australia, Oct. 15, 1982, 1853/82
Term of patent 14 years
U.S. Cl. D9—426



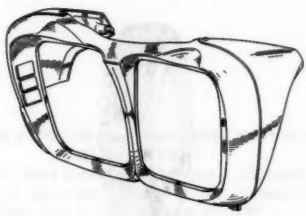
280,606
CLOSURE
Robert J. Kennedy, 21 Bulkara Rd., Bellevue Hill, New South Wales, 2023, and Gabriel Eber, 8 Borgah St., Carss Park, New South Wales, 2221, both of Australia
Filed Nov. 29, 1982, Ser. No. 445,029
Claims priority, application Australia, Jun. 16, 1982, 0700/82
Term of patent 14 years
U.S. Cl. D9—449



280,607
SENSOR UNIT
Arthur M. Denton, Charlotte, and Fred M. Mills, Mount Pleasant, both of N.C., assignors to Keane Monroe Corporation, Monroe, N.C.
Filed Oct. 24, 1983, Ser. No. 544,706
Term of patent 14 years
U.S. Cl. D10—106

280,608
MOBILE
Sven-Erik Boberg, Furumovägen 24, 803 58 Gävle, Sweden
Filed Jun. 24, 1983, Ser. No. 507,481
Claims priority, application Sweden, Dec. 28, 1982, 82-3098
Term of patent 14 years
U.S. Cl. D11—141

280,609
MOTORCYCLE AIR ENTRY FAIRING
Hubert Walter, Penzberg, and Hans-Joachim Saaksmeier, Munich, both of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke A.G., Munich, Fed. Rep. of Germany
Filed Mar. 22, 1983, Ser. No. 477,662
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1982, MR 13095
Term of patent 14 years
U.S. Cl. D12—182

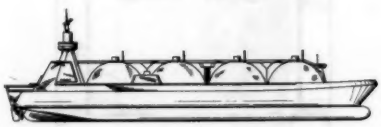


280,610
LICENSE PLATE FRAME
James M. Preisler, Mound, Minn., assignor to Drag Specialties, Inc., Minnetonka, Minn.
Filed Aug. 25, 1983, Ser. No. 526,339
Term of patent 14 years
U.S. Cl. D12—193

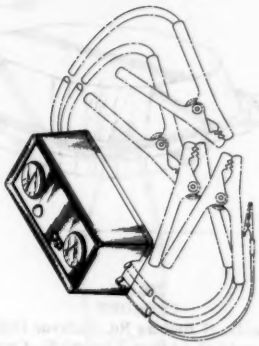
280,611
VEHICLE WHEEL STOP MAT
Maynard E. Nelson, 2421 Brookwood, Salina, Kans. 67401
Filed Mar. 18, 1983, Ser. No. 476,832
Term of patent 14 years
U.S. Cl. D12—217

280,612
VEHICLE TIRE
Hikaru Tansei, Tokyo, Japan, assignor to Bridgestone Tire Company Limited, Tokyo, Japan
Filed Jan. 3, 1983, Ser. No. 454,934
Claims priority, application Japan, Jul. 29, 1982, 57-34009
Term of patent 14 years
U.S. Cl. D12—146

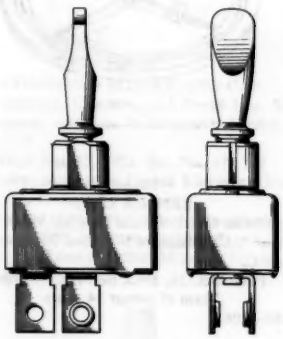
280,613
SHIP
Geir Grung, Oslo, Norway, assignor to Moss Rosenberg Verft A/S, Moss, Norway
Filed Mar. 23, 1983, Ser. No. 478,039
Claims priority, application Norway, Oct. 1, 1982, 63320
Term of patent 14 years
U.S. Cl. D12—315



280,614
CONTROL AND METER HOUSING FOR A BATTERY JUMPER CABLE SYSTEM
Bobby L. Bates, San Dimas, Calif., assignor to Bates-Johnson & Co., Inc., San Dimas, Calif.
Filed May 24, 1982, Ser. No. 381,058
Term of patent 14 years
U.S. Cl. D13—10



280,615
TOGGLE SWITCH
Willi K. Beck, Hingham, and Leo Roytberg, Saugus, both of Mass., assignors to Joseph Pollak Corporation, Boston, Mass.
Filed Feb. 8, 1983, Ser. No. 464,954
Term of patent 14 years
U.S. Cl. D13—37



280,616
MAGNETIC TAPE TRANSPORT
George A. Wilson, Portola Valley, Calif., assignor to Ampex Corporation, Redwood City, Calif.
Filed Apr. 2, 1982, Ser. No. 364,728
Term of patent 14 years
U.S. Cl. D14—8

280,617

TELEPHONE SET

Hiroshi Inaba, Yokohama, Japan, assignor to Nippon Tsushin Kogyo Kabushiki Kaisha, Kanagawa, Japan

Filed Apr. 29, 1983, Ser. No. 490,133

Claims priority, application Japan, Feb. 1, 1983, 58-3328

Term of patent 14 years

U.S. Cl. D14—58

280,618

HOUSING FOR A WALL-MOUNT TELEPHONE SET BASE

Michael Brown, Nepean; Clifford D. Read, Almonte, and Warren K. Ellis, Constance Bay, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Feb. 15, 1983, Ser. No. 466,423

Term of patent 14 years

U.S. Cl. D14—61

280,619

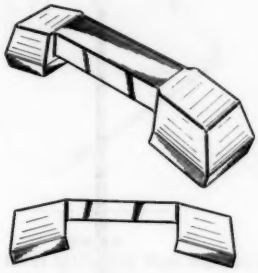
HOUSING FOR A TELEPHONE HANDSET

Michael Brown, Nepean; Clifford D. Read, Almonte, and Warren K. Ellis, Constance Bay, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Feb. 15, 1983, Ser. No. 466,416

Term of patent 14 years

U.S. Cl. D14—63



280,620

PORTABLE TWO-WAY RADIO APPARATUS OR SIMILAR ARTICLE

Richard J. Toth, Boca Raton, Fla., and John A. Eckmann, Baldwinsville, N.Y., assignors to Motorola, Inc., Schaumburg, Ill.

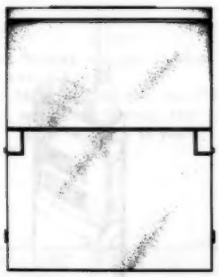
Filed Oct. 1, 1982, Ser. No. 432,390

Term of patent 14 years

U.S. Cl. D14—70

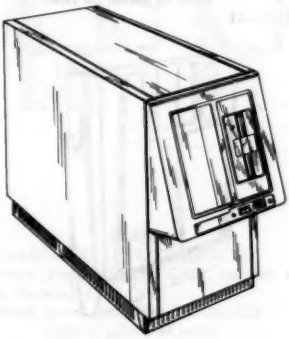
280,621
ANTENNA
Massimo Calearo, 21 Via Don Domenico Lora, 36100 Vicenza, Italy
Filed Mar. 24, 1983, Ser. No. 478,332
Claims priority, application Italy, Sep. 24, 1982, 64409/82[U]
Term of patent 14 years
U.S. Cl. D14—86

280,622
PORTABLE COMPUTER
William G. Moggridge, Palo Alto; David C. Paulsen, Santa Clara; Glenn T. Edens, Menlo Park, and Stephen R. Hobson, Palo Alto, all of Calif., assignors to Grid Systems Corporation, Mountain View, Calif.
Filed Oct. 18, 1982, Ser. No. 435,129
Term of patent 14 years
U.S. Cl. D14—100

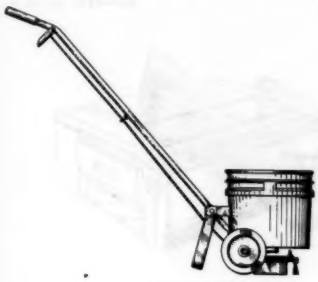


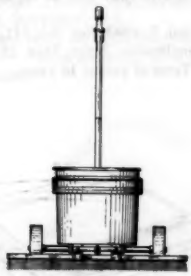
280,623
VIDEO TERMINAL
John F. Marshall, Provo, Utah, assignor to Beehive International, Salt Lake City, Utah
Filed May 27, 1983, Ser. No. 498,766
Term of patent 14 years
U.S. Cl. D14—106

280,624
FLOPPY DISK DRIVE FOR WORD PROCESSOR SYSTEM
Ralph M. Swan, Sunnyvale; Benjamin Sherman, Fremont, and Judith A. Agard, San Jose, all of Calif., assignors to Pitney Bowes Inc., Stamford, Conn.
Filed Dec. 15, 1982, Ser. No. 449,956
Term of patent 14 years
U.S. Cl. D14—109

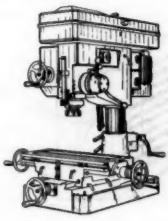


280,625
PAVEMENT SEALANT SPREADER
Alphonse Verive, deceased, c/o William Breymer, 7711 Drew Ave. BurrRidge, IL 60521, late of Glendale Hgts., Ill.
Filed Mar. 7, 1983, Ser. No. 472,960
Term of patent 14 years
U.S. Cl. D15—13

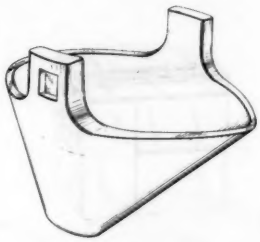




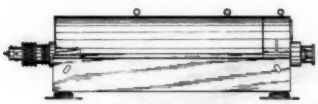
280,626
DRILL PRESS
Ruey Z. Chen, 18, La. 144, Tucheng Rd., Tali Hsiang, Taichung Hsien, Taiwan
Filed Apr. 28, 1982, Ser. No. 372,692
Term of patent 14 years
U.S. Cl. D15—132



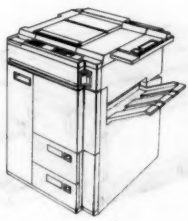
280,627
LADLE FOR ALUMINUM DIE CASTING OR THE LIKE
Stuart Z. Uram, Alpine, N.J., and Jerome Fischman, New York, N.Y., assignors to Certech, Inc., Wood-Ridge, N.J.
Filed Jun. 28, 1983, Ser. No. 508,568
Term of patent 14 years
U.S. Cl. D15—135



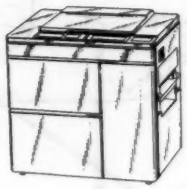
280,628
CENTRIFUGATION MACHINE FOR SEPARATING, DRYING OR THE LIKE
Paul Besson, Sevres, France, assignor to Guinard Centrifugation, Saint-Cloud, France
Filed Jun. 30, 1983, Ser. No. 509,768
Term of patent 14 years
U.S. Cl. D15—147



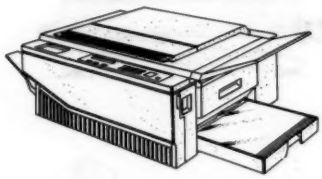
280,629
ELECTROSTATIC COPYING MACHINE
Tetsuya Goto; Yasuhiro Saito, and Toshio Umino, all of Yokohama, Japan, assignors to Ricoh Company, Ltd., Japan
Filed Apr. 19, 1983, Ser. No. 486,383
Claims priority, application Japan, Oct. 19, 1982, 57-047521
Term of patent 14 years
U.S. Cl. D16—30



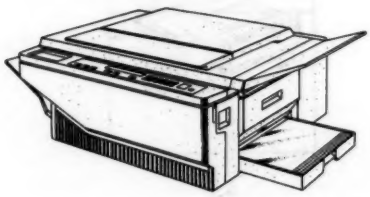
280,630
ELECTROPHOTOGRAPHIC COPIER
Toshihiko Kadota, Hachioji, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed May 16, 1983, Ser. No. 495,038
Claims priority, application Japan, Nov. 20, 1982, 57-52523
Term of patent 14 years
U.S. Cl. D16—30



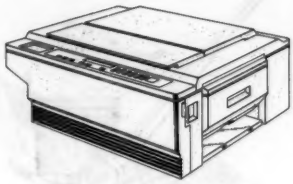
280,631
ELECTROSTATIC COPYING MACHINE
Kenichi Nakade, Yokohama, Japan, assignor to Ricoh Company, Ltd., Japan
Filed Apr. 15, 1983, Ser. No. 485,175
Claims priority, application Japan, Oct. 15, 1982, 57-46871
Term of patent 14 years
U.S. Cl. D16—31



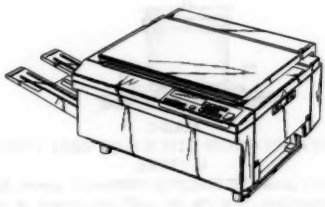
280,632
ELECTROSTATIC COPYING MACHINE
Kenichi Nakade, Yokohama, Japan, assignor to Ricoh Company, Ltd., Japan
Filed May 26, 1983, Ser. No. 498,456
Claims priority, application Japan, Nov. 27, 1982, 57-53543
Term of patent 14 years
U.S. Cl. D16—31



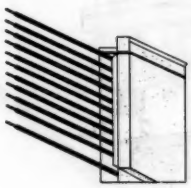
280,633
ELECTROSTATIC COPYING MACHINE
Yasuhiro Saito, Yokohama, Japan, assignor to Ricoh Company, Ltd., Japan
Filed Jun. 27, 1983, Ser. No. 508,816
Claims priority, application Japan, Dec. 28, 1982, 57-59368; Dec. 28, 1982, 57-59370
Term of patent 14 years
U.S. Cl. D16—31



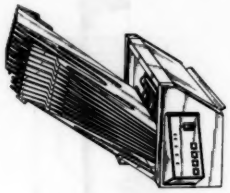
280,634
ELECTROPHOTOGRAPHIC COPYING MACHINE
Michio Imada, Kodaira, and Kyo Toyoguchi, Tokyo, both of Japan, assignors to Olympus Optical Company Ltd., Tokyo, Japan
Filed Jul. 7, 1983, Ser. No. 511,735
Claims priority, application Japan, Mar. 25, 1983, 58-12513
Term of patent 14 years
U.S. Cl. D16—31



280,635
SORTER FOR COPYING MACHINE
Yasuhiro Saito, Tokyo; Tetsuya Goto, and Toshio Umino, both of Kanagawa, all of Japan, assignors to Ricoh Company, Ltd., Japan
Filed Sep. 17, 1982, Ser. No. 419,402
Claims priority, application Japan, Mar. 18, 1982, 57-11147
Term of patent 14 years
U.S. Cl. D16—32



280,636
SORTER ATTACHMENT FOR COPIERS
Kunio Hara, Chiba, and Tooru Okuyama, Isehara, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed Jul. 1, 1983, Ser. No. 510,245
Claims priority, application Japan, Jan. 20, 1983, 58-1532
Term of patent 14 years
U.S. Cl. D16—32

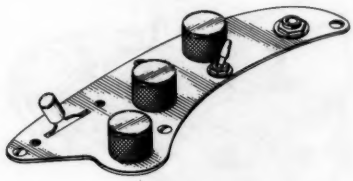


280,637
PAIR OF SUNGLASSES OR THE LIKE
Trudy H. Zancaner, Treviso, Italy, assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Mar. 14, 1983, Ser. No. 474,946
Term of patent 14 years
U.S. Cl. D16—102

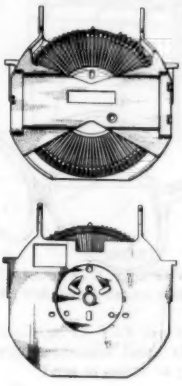
280,638
PAIR OF SUNGLASSES OR THE LIKE
Trudy H. Zancaner, Treviso, Italy, assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Mar. 14, 1983, Ser. No. 474,955
Term of patent 14 years
U.S. Cl. D16—102

280,639
PAIR OF SUNGLASSES OR THE LIKE
Trudy H. Zancaner, Treviso, Italy, assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Mar. 14, 1983, Ser. No. 474,956
Term of patent 14 years
U.S. Cl. D16—102

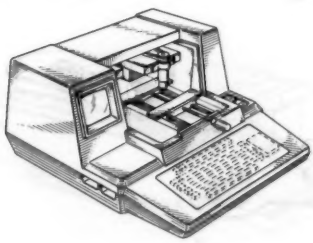
280,640
CONTROL PANEL FOR AN ELECTRIC GUITAR OR THE LIKE
C. Leo Fender, 1510 Dana Pl., Fullerton, Calif. 92635
Filed May 23, 1983, Ser. No. 497,246
Term of patent 14 years
U.S. Cl. D17—20



280,641
PRINT WHEEL CARTRIDGE
James P. Harden; Selahattin A. Okcuoglu, both of Lexington; Preston O. Robards, Jr., Richmond; Iraj D. Shakib, and Thomas D. Souder, both of Lexington, all of Ky., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 14, 1983, Ser. No. 532,131
Term of patent 14 years
U.S. Cl. D18—12



280,642
HOUSING FOR A PORTABLE COMPUTER CONTROLLED ENGRAVING MACHINE
Seth D. Neiman, San Francisco, Calif., assignor to Dahlgren Engraving Systems, Inc., San Francisco, Calif.
Filed Aug. 25, 1983, Ser. No. 526,424
Term of patent 14 years
U.S. Cl. D18—13



280,643
COMBINED STAMP AND CAP THEREFOR
Takashi Ichikawa, Nagoya, Japan, assignor to Shachihata Industry Co., Ltd., Japan
Filed Aug. 18, 1983, Ser. No. 524,295
Claims priority, application Japan, Apr. 14, 1983, 58-15916
Term of patent 14 years
U.S. Cl. D18—15

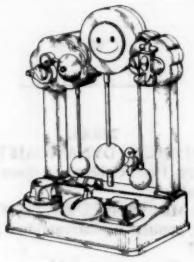
280,644
COMBINED STAMP AND CAP THEREFOR
Takashi Ichikawa, Nagoya, Japan, assignor to Shachihata Industry Co., Ltd., Japan
Filed Aug. 18, 1983, Ser. No. 524,398
Claims priority, application Japan, Apr. 14, 1983, 58-15917
Term of patent 14 years
U.S. Cl. D18—15

280,645
INK ROLLER SET
Masahiko Mori, Shiojiri, Japan, assignor to Epson Corporation, Japan
Filed Jan. 27, 1983, Ser. No. 461,417
Claims priority, application Japan, Jul. 28, 1982, 34091
Term of patent 14 years
U.S. Cl. D18—22

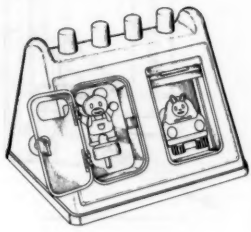
280,646
DOORKNOB PRIVACY SIGN
James T. Howard, and Mary W. Howard, both of 101 Oakmont Ct., NE., Vienna, Va. 22180
Filed Sep. 23, 1980, Ser. No. 189,568
Term of patent 14 years
U.S. Cl. D20—40

280,647
GAME SPIN WHEEL
Clinton Mickens, 629 S. Main, Las Vegas, Nev. 89109
Filed Feb. 1, 1983, Ser. No. 463,037
Term of patent 14 years
U.S. Cl. D21—39

280,648
ACTIVITY TOY
Tomoaki Kodama, Tokyo, Japan, assignor to Kawada Co., Ltd., Tokyo, Japan
Filed Sep. 16, 1983, Ser. No. 532,780
Claims priority, application Japan, Jun. 15, 1983, 58-25474
Term of patent 14 years
U.S. Cl. D21—64



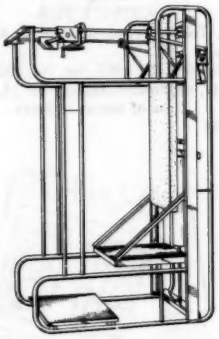
280,649
ACTIVITY TOY
Keiji Iwabuchi, Tokyo, Japan, assignor to Kawada Co., Ltd., Tokyo, Japan
Filed Sep. 16, 1983, Ser. No. 532,781
Claims priority, application Japan, Jun. 15, 1983, 58-25476
Term of patent 14 years
U.S. Cl. D21—64



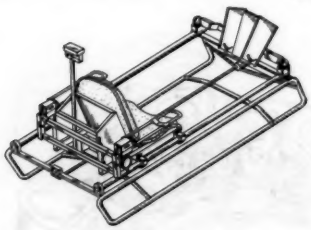
280,650
ACTIVITY TOY
Yuichi Tateyama, Tokyo, Japan, assignor to Kawada Co., Ltd., Tokyo, Japan
Filed Sep. 16, 1983, Ser. No. 532,782
Claims priority, application Japan, Jun. 15, 1983, 58-25475
Term of patent 14 years
U.S. Cl. D21—64

280,651
FIRE STICK FOR JUGGLERS
Brian J. Dube, 24 Washington Sq. North, New York, N.Y. 10011
Filed Nov. 5, 1982, Ser. No. 415,363
Term of patent 14 years
U.S. Cl. D21—100

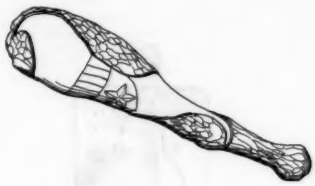
280,652
PHYSICAL DYNAMOMETER
Ronald C. de Buck, Prof. Cobbenhagenlaan 228, 5037 De Tilburg, Netherlands
Filed Mar. 18, 1983, Ser. No. 476,842
Claims priority, application International Patent In, Sep. 20, 1982, DM/001817
Term of patent 14 years
U.S. Cl. D21—191



280,653
PHYSICAL DYNAMOMETER
Ronald C. de Buck, Prof. Cobbenhagenlaan 228, 5037 De Tilburg, Netherlands
Filed Mar. 18, 1983, Ser. No. 477,677
Claims priority, application International Patent In, Sep. 20, 1982, DM/001817
Term of patent 14 years
U.S. Cl. D21—191



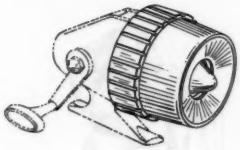
280,654
NOVELTY CLUB
Stuart R. Andrews, 6848 Holeman Ave., Blaine, Wash. 98230
Filed Apr. 4, 1983, Ser. No. 463,810
Term of patent 14 years
U.S. Cl. D21—211



280,655
COMBINED RECOIL REDUCER AND FLAME SUPPRESSOR FOR FIREARMS
Vito Cellini, 3115 Old Ranch Rd., San Antonio, Tex. 78217
Filed Mar. 2, 1983, Ser. No. 471,487
Term of patent 14 years
U.S. Cl. D22—7

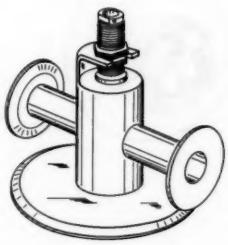
280,656
LINE GUIDE FOR FISHING ROD
Ryuichi Ohmura, Shizuoka, Japan, assignor to Fuji Kogyo Co., Ltd., Japan
Filed Jan. 6, 1983, Ser. No. 456,294
Term of patent 14 years
U.S. Cl. D22—24

280,657
FRONT COVER FOR A FISHING REEL
Edwin B. Hatch, West Bend, Wis., assignor to Brunswick Corporation, Skokie, Ill.
Filed Jun. 22, 1983, Ser. No. 505,471
Term of patent 14 years
U.S. Cl. D22—25



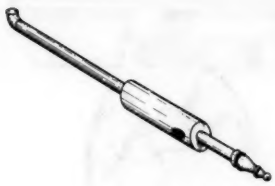
280,658
AQUARIUM FILTER
Allan H. Willinger, Englewood, N.J., assignor to Willinger Bros. Inc., Englewood, N.J.
Filed May 6, 1983, Ser. No. 492,466
Term of patent 14 years
U.S. Cl. D23—4

280,659
COMBINED PIPE FITTING AND SPRINKLING NOZZLE
Nils I. Arthun, Partille, and Peter J. Löfgren, Hovås, both of Sweden, assignors to Steridose Systems AB, Askim, Sweden
Filed May 17, 1982, Ser. No. 378,829
Term of patent 14 years
U.S. Cl. D23—34

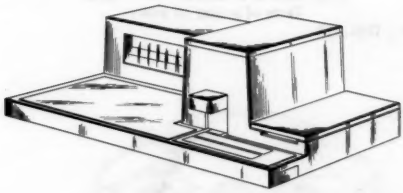


280,660
HUMIDIFIER
Ernst Muchenberger, Albisstrasse 5, CH-6300 Zug, Switzerland
Filed Sep. 30, 1982, Ser. No. 429,335
Claims priority, application Hague, Apr. 30, 1982, 72347
Term of patent 14 years
U.S. Cl. D23—150

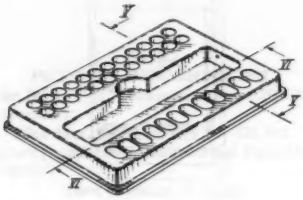
280,661
BLOWER
Malcolm L. Hill, Box 532, Cookeville, Tenn. 38501
Filed Jul. 9, 1982, Ser. No. 396,708
Term of patent 14 years
U.S. Cl. D23—162



280,662
TISSUE EMBEDDER
Stephen A. Bartfay, 33 Candlewood La., Amherst, N.Y. 14221, and Raymond J. Buczynski, 34 Hedwig Ave., Buffalo, N.Y. 14211
Filed Jan. 5, 1983, Ser. No. 456,480
Term of patent 14 years
U.S. Cl. D24—8

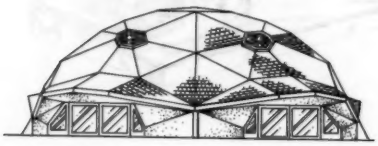


280,663
TRAY FOR CARRYING OUT CHEMICAL AND BIOLOGICAL TESTS
Lionel F. S. Albon, Oakley, and Anthony J. Winterson, Wootton, both of England, assignors to Internationale Octrooi Maatschappij "Octropa" B.V., Rotterdam, Netherlands
Filed May 14, 1982, Ser. No. 378,393
Claims priority, application United Kingdom, Nov. 17, 1981, 1003667
Term of patent 14 years
U.S. Cl. D24—31

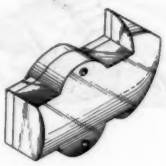


280,664
BODY MASSAGER
Masuo Ishida, 5750 N. Kenmore Ave., Chicago, Ill. 60660
Filed Apr. 18, 1983, Ser. No. 485,962
Term of patent 14 years
U.S. Cl. D24—36

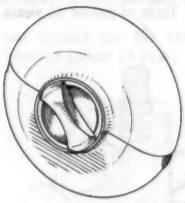
280,665
GEODESIC DOME BUILDING
Alvin E. Miller, 5605 N. Genematas Dr., Tucson, Ariz. 85704
Filed Mar. 2, 1983, Ser. No. 471,512
Term of patent 14 years
U.S. Cl. D25—13



280,666
TURN SIGNAL LENS
Charles W. Haynes, Pine St., South Dayton, N.Y. 14138
Filed Jul. 6, 1983, Ser. No. 512,008
Term of patent 14 years
U.S. Cl. D26—125

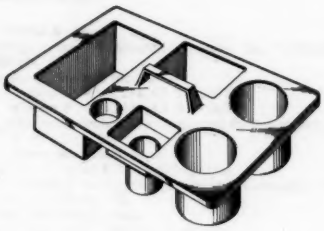


280,667
DISPENSER FOR DEODORANT OR OTHER TOPICAL PRODUCT
Robert A. Bennett, Easton, Conn., assignor to AE Development Corporation, Minneapolis, Minn.
Filed Jun. 13, 1983, Ser. No. 503,556
Term of patent 14 years
U.S. Cl. D28—7



280,668
SADDLE
Judith A. Sarnelli, 15521 Morrison St., Sherman Oaks, Calif. 91403
Filed Jun. 16, 1982, Ser. No. 388,803
Term of patent 14 years
U.S. Cl. D30—20

280,669
CARRYING CONTAINER FOR VEHICULAR MAINTENANCE PRODUCTS
Kevin F. Hammeke, 404 N. Pinon, Olathe, Kans. 66061
Filed Sep. 21, 1982, Ser. No. 420,872
Term of patent 14 years
U.S. Cl. D34—45



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 17TH DAY OF SEPTEMBER, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Finkl & Sons Co.: *See—*
Finkl, Charles W.; Lehman, Albert L.; and Philbrick, Herbert S., Jr., 4,541,862, Cl. 75-12.000.

AB Volvo: *See—*
Jonasson, Kjell, 4,541,654, Cl. 280-801.000.

Abbott Laboratories: *See—*
Chu, Daniel T., 4,542,133, Cl. 514-232.000.

Abe, Eiichi; and Hirosue, Hideharu, to Agency of Industrial Science and Technology. Method and apparatus for continuously coating discrete particles in turning fluidized bed. 4,542,043, Cl. 427-213.000.

Abe, Masahiro: *See—*
Takeuchi, Koji; Abe, Masahiro; Ito, Nobuo; and Hirai, Kiyomiki, 4,542,202, Cl. 528-96.000.

Abe, Ryoji: *See—*
Tanaka, Toshimitsu; Abe, Ryoji; and Asanomi, Koji, 4,541,399, Cl. 123-573.000.

Abe, Shigeo: *See—*
Tanaka, Shun-ichiro; Mizunoya, Nobuyuki; and Abe, Shigeo, 4,542,073, Cl. 428-446.000.

Abedi, Hedayat: *See—*
Neelameggham, Ramaswami; Abedi, Hedayat; Priscu, John C.; and Legge, Michael H., 4,541,867, Cl. 75-58.000.

Aberegg, Dale: *See—*
Calvert, Scott A.; Gelin, Robert J.; and Aberegg, Dale, 4,541,130, Cl. 4-593.000.

Abu-Isa, Ismat A., to General Motors Corporation. Thermal sensing element using methanol saturated fluorocarbon elastomer as the heat responsive material. 4,541,735, Cl. 374-188.000.

Acampora, Alfonse, to RCA Corporation. Sampled data filter system as for a digital TV. 4,542,475, Cl. 364-724.000.

Adachi, Keiichi: *See—*
Sasaki, Noboru; Ishikawa, Takatoshi; and Adachi, Keiichi, 4,542,091, Cl. 430-380.000.

Adams, Ernest C., to Miles Laboratories. Latex agglutination determination of IgG in neonatals and in colostrum. 4,542,103, Cl. 436-534.000.

Adams, James D., to United States of America, Navy. Pin rooted blade biaxial air seal. 4,541,778, Cl. 416-193.00A.

Ader, Joseph R., to RCA Corporation. Digital color matrix for a digital television receiver. 4,542,402, Cl. 358-30.000.

Adler, Harold A. Method and apparatus for mediating inter-jaw biting pressure. 4,541,803, Cl. 433-141.000.

Advanced Micro Devices, Inc.: *See—*
Brcich, Joseph A.; Levy, Roy J.; Madewell, Jimmy; and Threewitt, N. Bruce, 4,542,454, Cl. 364-200.000.
Knight, Colin W. T., 4,541,893, Cl. 156-643.000.
Rallapalli, Krishna; and Kaku, Shinkyo, 4,542,413, Cl. 358-261.000.
Wincn, John M.; and Laurent, Thierry M., 4,542,308, Cl. 307-494.000.

AECI Limited: *See—*
Norton, John H. R.; Rebello, Peter R.; Kavonic, Clifford M.; and Stiff, Anthony J., 4,541,835, Cl. 44-53.000.
Norton, John H. R.; Rebello, Peter R.; Kavonic, Clifford M.; and Stiff, Anthony J., 4,541,837, Cl. 44-53.000.

Aerojet-General Corporation: *See—*
Moore, Donald W., 4,542,508, Cl. 371-29.000.

Agarwal, Shashi B.: *See—*
Nickola, Richard A.; Sok, Brian A.; and Agarwal, Shashi B., 4,542,048, Cl. 427-380.000.

Agarwala, Om P. Sugar and acid infused fruit products and process therefor. 4,542,033, Cl. 426-321.000.

Agence Nationale de Valorisation de la Recherche: *See—*
Armand, Michel B.; and El Kadiri Cherkaoui El Moursli, Fouzia, 4,542,081, Cl. 429-192.000.

Agency of Industrial Science and Technology: *See—*
Abe, Eiichi; and Hirosue, Hideharu, 4,542,043, Cl. 427-213.000.
Noyori, Masato; Saitou, Hiroyoshi; Sato, Masamitsu; and Kikuchi, Kiyoshi, 4,542,477, Cl. 364-900.000.
Sawai, Nobushige; Miyasaka, Kaneyoshi; and Murata, Ryoji, 4,541,165, Cl. 29-568.000.

AGFA-Gevaert N.V.: *See—*
Van Humbeeck, Freddy J.; Burtin, Jean; and Van Meenen, Johnny P., 4,541,317, Cl. 83-34.000.

Ahlers, Klaas: *See—*
Schupp, Eberhard; Loch, Werner; Osterloh, Rolf; and Ahlers, Klaas, 4,542,173, Cl. 523-414.000.
Schupp, Eberhard; Loch, Werner; Osterloh, Rolf; and Ahlers, Klaas, 4,542,193, Cl. 525-490.000.

Aichi Machine Industry Company, Limited: *See—*
Ebihara, Sakae; Tanizaki, Hiroyuki; Sato, Kazuma; and Kanazawa, Yuzo, 4,541,667, Cl. 297-64.000.

Ainsworth, Thomas S.: *See—*
Hall, Robert; and Ainsworth, Thomas S., 4,542,316, Cl. 313-318.000.

Air Products and Chemicals, Inc.: *See—*
Bechara, Ibrahim S., 4,542,214, Cl. 544-107.000.
Hegarty, William P., 4,542,114, Cl. 502-39.000.
Newton, Charles L.; Stuber, Wayne G.; and Patterson, Michael A., 4,541,852, Cl. 62-11.000.

Aisan Kogyo Kabushiki Kaisha: *See—*
Kitamura, Sunao, 4,541,378, Cl. 123-333.000.
Nomura, Yoshihisa; Watanabe, Shingo; and Yamamoto, Shoichi, 4,541,788, Cl. 417-471.000.

Aisin Seiki Kabushiki Kaisha: *See—*
Kodama, Hisashi, 4,541,374, Cl. 123-90.590.
Naruse, Yoshihiro, 4,542,489, Cl. 367-93.000.

Aisin-Warner Limited: *See—*
Sakakibara, Shiro, 4,541,820, Cl. 474-17.000.
Sakakibara, Shiro, 4,541,821, Cl. 474-17.000.

Ajinomoto Company Incorporated: *See—*
Niki, Katsumi; Inokuchi, Hiroo; Yagi, Tatsuhiko; and Nakamura, Asao, 4,541,908, Cl. 204-101.000.
Takeuchi, Koji; Abe, Masahiro; Ito, Nobuo; and Hirai, Kiyomiki, 4,542,202, Cl. 528-96.000.

Akazawa, Yukio; Ishihara, Noboru; and Ohara, Mamoru, to Nippon Telegraph & Telephone Public Corporation. Monolithic integrated circuit device including AC negative feedback type high frequency amplifier circuit. 4,542,350, Cl. 330-293.000.

Akhavi, David S., to Iolab Corp. Fixture for holding an optical lens during tumbling. 4,541,206, Cl. 51-217.00L.

Akiyama, Nobuyuki; and Koizumi, Mitsuyoshi, to Hitachi, Ltd. Apparatus for detecting contaminants on the reticle of exposure system. 4,541,715, Cl. 356-237.000.

Aksberg, Arvi J.: *See—*
Schmidt, Henning M.; Malmkvist, Hans G.; Aksberg, Arvi J.; and Johansson, Jan H., 4,542,264, Cl. 179-111.00E.

Aktiebolaget IRO: *See—*
Tholander, Lars H. G., 4,541,462, Cl. 139-452.000.

Akutagawa, Hitoshi; Shigemasa, Masayoshi; and Hayashi, Hiroaki, to Mazda Motor Corporation. Four-wheel drive automobile. 4,541,503, Cl. 180-249.000.

Akzona Incorporated: *See—*
White, Kenneth B.; and Largent, William J., 4,542,163, Cl. 521-105.000.

Albert-Frankenthal AG: *See—*
Bernauer, Joachim, 4,541,336, Cl. 101-211.000.

Albert, Hans, to Scapa Inc. Papermakers fabric of nonwoven layers in a laminated construction. 4,541,895, Cl. 162-348.000.

Alexander, Jeffery C.; and Zahedi, Karim, to EFB, Inc. Method for treating gas streams. 4,542,000, Cl. 423-244.000.

Alfa-Laval AB: *See—*
Aule, Olaf; and Noren, Tommy, 4,542,034, Cl. 426-522.000.

Alkire, John D.: *See—*
Jones, Loyd W.; and Alkire, John D., 4,541,946, Cl. 252-189.000.

Allen, Ross R., to Hewlett-Packard Company. Self cleaning ink jet drop generator having crosstalk reduction features. 4,542,389, Cl. 346-140.00R.

Allen, Terry S.; Smith, Dennis W.; and Jacobson, Peter E., to Sperry Corporation. Controlled capillary ball bearing cage. 4,541,739, Cl. 384-470.000.

Alles, Harold G.; and Kubik, Peter S., to AT&T Bell Laboratories. Deformable touch sensitive surface. 4,542,375, Cl. 340-712.000.

Alley, Robert P.: *See—*
Kornrumpf, William P.; and Alley, Robert P., 4,541,288, Cl. 73-862.690.

Allied Corporation: *See—*
Fenzel, David T., 4,541,516, Cl. 192-85.0CA.
Liburdi, Francesco, 4,541,174, Cl. 29-883.000.
Sachleben, Harold G.; Hubbard, David W.; Botset, Richard A.; and Hardage, Thomas B., 4,541,576, Cl. 242-18.0PW.

Allison, Philip J., to T. S. Simms & Co. Limited. Combination coupler and support bearing for a paint roller. 4,541,140, Cl. 15-230.110.

Alps Electric Co., Ltd.: *See—*
Oyama, Akira, 4,542,366, Cl. 338-196.000.

Alsbach, Walter G.: *See—*
Fraser, Allister F.; and Alsbach, Walter G., 4,542,257, Cl. 136-251.000.

Aluminum Company of America: *See—*
Culleiton, Charles J.; LaCamera, Alfred F.; and Robare, Thomas J., 4,541,907, Cl. 204-67.000.
Horansky, Frank J.; and Arndt, Eric D., 4,541,332, Cl. 100-3.000.

Amax Inc.: *See—*
Neelameggham, Ramaswami; Abedi, Hedayat; Priscu, John C.; and Legge, Michael H., 4,541,867, Cl. 75-58.000.

Amchem Products: *See—*
Anderson, James D.; and Seigle, Sandra K., 4,541,945, Cl. 252-149.000.

Amemiya, Shin-ichi, to Fujitsu Limited. Ultrasonic pulse Doppler blood flow meter. 4,541,437, Cl. 128-663.000.

American Can Company: *See—*
Caner, Ali R.; and Spencer, Kenneth B., 4,542,029, Cl. 426-127.000.
Hsu, Joseph C.; Vought, Donald W.; and Walbrun, George H., 4,541,983, Cl. 264-514.000.

American Cyanamid Company: *See—*
Wright, William B., Jr.; Press, Jeffery B.; and Tomcufcik, Andrew S., 4,542,145, Cl. 514-383.000.

American Home Products Corporation: *See—*
Bagli, Jehan; Bogri, Tibor; Palameta, Bozidar; and Borella, Luis E., 4,542,140, Cl. 514-332.000.

American Home Products Corporation (Del.): *See—*
Hon, Edward H., 4,541,439, Cl. 128-691.000.

American Maplan Corporation: *See—*
Hanslik, Wilhelm, 4,541,270, Cl. 73-56.000.

Ameron Inc.: *See—*
Carter, J. Warne, 4,541,887, Cl. 156-431.000.

Amos, Alvin W. Portable welding jig. 4,541,621, Cl. 269-51.000.

Amos, Louis A. Piston dome. 4,541,377, Cl. 123-307.000.

AMP Incorporated: *See—*
Logan, Thomas D.; and Wedell, David A., 4,541,677, Cl. 339-17.00F.

Anami, Kenji; Yoshimoto, Masahiko; Shinohara, Hirofumi; and Tomisawa, Osamu, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device. 4,542,486, Cl. 365-230.000.

Anderson, James D.; and Seigle, Sandra K., to Amchem Products. Inhibitor-containing acid cleaning compositions and processes. 4,541,945, Cl. 252-149.000.

Anderson, Jerry M., to AT&T Bell Laboratories. Optical connector sleeve. 4,541,685, Cl. 350-96.210.

Anderson, John D.: *See—*
. Wainwright, Ronald C.; Goy, Nicholas M.; Anderson, John D.; Pettigrew, Robert M.; and Bradbrook, John D., 4,541,695, Cl. 350-429.000.

Anderson, John E., to Union Carbide Corporation. Oxygen aspirator burner for firing a furnace. 4,541,796, Cl. 431-187.000.

Anderson, Richard N., to Hunter Douglas, Inc. Tilter mechanism for a slatted blind. 4,541,468, Cl. 160-177.000.

Anding, Claude: *See—*
Lacroix, Guy; Anding, Claude; and Viricel, Andree, 4,542,023, Cl. 514-126.000.

Ando, Kunio: *See—*
Hosokawa, Tomoyoshi; Matsuura, Ikutoshi; Takahashi, Hidenori; Ando, Kunio; and Tamura, Gakuzo, 4,542,143, Cl. 514-356.000.

Ando, Yuzi, to Sharp Kabushiki Kaisha. Slipping connector assembly for application to microwave oven. 4,542,270, Cl. 219-10.55B.

Andre, Wolfram K., to Kurt Wolf & Co. KG. Fitting for a cooking utensil, particularly a steam pressure cooking pan. 4,541,733, Cl. 374-149.000.

Andreasson, Olof I. Electrical chain welding machine. 4,542,275, Cl. 219-51.000.

Andrepont, John S.; and Korzonas, Raymond, to Chicago Bridge & Iron Company. Constant temperature refrigeration system for a freeze heat exchanger. 4,541,248, Cl. 62-54.000.

Anglin, Jeanne M.; Edwards, Richard R.; and Thomas, John E., to Boeing Company, The. Composite structure having conductive surfaces. 4,542,056, Cl. 428-116.000.

Anouchi, Abraham: *See—*
Tozier, John E.; Anouchi, Abraham; and Critchlow, Richard, 4,541,988, Cl. 422-94.000.

Anshen, Walter H.: *See—*
Breitscheidel, Hans-Ulrich; Anshen, Walter H.; and Kautz, Rudolf, 4,542,057, Cl. 428-126.000.

Anthony, Thomas E. Electronic blood cell counter. 4,542,518, Cl. 377-10.000.

Antonson, Douglas M., to Flo-Pac Corporation. Pull-apart mounting hub. 4,541,207, Cl. 51-376.000.

Aoki, Hideki. Dental cement composition comprising hydroxyapatite and acrylic acid/itaconic acid copolymer hardener. 4,542,167, Cl. 523-109.000.

Aoki, Hiroshi: *See—*
Sugai, Manabu; Kagohashi, Yasuyoshi; and Aoki, Hiroshi, 4,541,589, Cl. 242-200.000.

Aoki, Shigeru: *See—*
Tashiro, Yasuhisa; and Aoki, Shigeru, 4,542,236, Cl. 562-401.000.

Aono, Koichiro: *See—*
Takahashi, Hiroshi; Nishioka, Akira; Tokunaga, Fumihiro; Aotani, Yoshimasa; and Aono, Koichiro, 4,542,085, Cl. 430-158.000.

Aotani, Yoshimasa: *See—*
Takahashi, Hiroshi; Nishioka, Akira; Tokunaga, Fumihiro; Aotani, Yoshimasa; and Aono, Koichiro, 4,542,085, Cl. 430-158.000.

Aoyama, Yutaka: *See—*
Yanai, Tokiyoshi; Yamaguchi, Hirotsugu; Fukino, Masato; and Aoyama, Yutaka, 4,541,499, Cl. 180-142.000.

Arai, Masayuki; Ogasawara, Terumi; and Shikano, Tohru, to Asahi Seimitsu Kabushiki Kaisha. Automatic diaphragm control device of objective provided with automatic diaphragm for closed circuit television (CCTV) camera. 4,542,410, Cl. 358-228.000.

Arai, Naoto: *See—*
Saito, Toranosuke; Kitani, Masakatu; Ishibashi, Takashi; Arai, Naoto; Murakami, Takeshi; and Suzuki, Toshitake, 4,542,395, Cl. 346-216.000.

Arai, Ryuichi: *See—*
Toganoh, Shigeo; and Arai, Ryuichi, 4,542,059, Cl. 428-141.000.

Arai, Yoshio: *See—*
Suganuma, Saburo; Kataoka, Hiroyuki; and Arai, Yoshio, 4,542,378, Cl. 340-734.000.

Arakawa, Yoshio: *See—*
Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; Inoue, Yoshihisa; Naito, Youichiro; and Suyama, Tadakazu, 4,542,147, Cl. 514-411.000.

Araki, Ken: *See—*
Kinoshita, Akemi; Araki, Ken; Nawafune, Hidemi; and Mizumoto, Shozo, 4,541,902, Cl. 204-1.00T.

Arashi, Masahiro, to Onomori Iron Works Co., Ltd. Jigger dyeing apparatus. 4,541,255, Cl. 68-22.00R.

Arditty, Herve ; and Rollin, Michel, to Thomson-CSF. Optical fibre interferometric electric current measuring device. 4,542,338, Cl. 324-117.00R.

Arena, Joseph W.; Gilson, Karle B.; Malcolm, David T.; and Mellander, John A. R., to Crown Forest Industries Limited. Method of making overlaid plywood. 4,541,880, Cl. 156-94.000.

Arimatsu, Toshio, to Sumitomo Rubber Industries, Ltd. Method for controlling the state of vulcanization of wheel tires and apparatus therefor. 4,542,466, Cl. 364-473.000.

Aristo Graphic Systeme GmbH & Co. KG: *See—*
Behnke, Gert, 4,542,261, Cl. 178-18.000.

Aritaka, Norihiro: *See—*
Takeyama, Akira; Tazaki, Kenshi; Nojima, Satoshi; Aritaka, Norihiro; and Mita, Teruyoshi, 4,542,496, Cl. 370-16.000.

Aritsubo, Hirofumi: *See—*
Ogawa, Takahisa; and Aritsubo, Hirofumi, 4,541,638, Cl. 277-9.000.

Armand, Michel B.; and El Kadiri Cherkaoui El Moursli, Fouzia, to Agence Nationale de Valorisation de la Recherche; and Societe Nationale Elf Aquitaine. Tetra-alkynyl or -aluminates of alkali metals, their solid solutions with plastic materials and their use for the constitution of conductor elements for electrochemical generators. 4,542,081, Cl. 429-192.000.

Armerad Betong Vagforbattringar Aktiebolag: *See—*
Sjodin, Carl A., 4,541,846, Cl. 55-97.000.

Armold, Clark W.; Huebner, Michael B.; and Tobin, David. Process for separation of ash from waste activated sludge. 4,541,933, Cl. 210-780.000.

Armour, Charles R.; Domke, Robert R.; and Spero, Richard J. Training interface device for dispensing stores. 4,541,804, Cl. 434-15.000.

Arndt, Eric D.: *See—*
Horansky, Frank J.; and Arndt, Eric D., 4,541,332, Cl. 100-3.000.

Arnold, Emil; and Singer, Barry M., to North American Philips Corporation. Method and apparatus for displaying and reading out an image. 4,542,405, Cl. 358-111.000.

Arons, Richard M., to Celanese Corporation. Production of ferrimagnetic spinel fibers. 4,541,973, Cl. 264-60.000.

Arthur Pfeiffer Vakuumtechnik Wetzlar GmbH: *See—*
Becker, Willi, 4,541,772, Cl. 415-90.000.

Artronics Corporation: *See—*
Santomango, Anthony; and Hatheway, Nicholas N., Jr., 4,542,341, Cl. 324-158.00F.

Asahi Kasei Kasyo Kabushiki Kaisha: *See—*
Katsumata, Tsutomu; and Dozono, Tetsuro, 4,541,964, Cl. 260-465.300.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Tanji, Hiroshi; Iwata, Michitaka; and Sato, Hideo, 4,542,063, Cl. 428-364.000.

Asahi Seimitsu Kabushiki Kaisha: *See—*
Arai, Masayuki; Ogasawara, Terumi; and Shikano, Tohru, 4,542,410, Cl. 358-228.000.

Asai, Isao: *See—*
Suzuki, Osamu; Morita, Takayuki; Muramatsu, Shigeru; and Asai, Isao, 4,541,577, Cl. 242-35.50A.

Asano, Masamichi: *See—*
Iwahashi, Hiroshi; and Asano, Masamichi, 4,542,485, Cl. 365-230.000.

Asano, Tamotsu: *See—*
Umemoto, Mitsumasa; Asano, Tamotsu; Nagata, Teruyuki; and Numata, Satoshi, 4,542,243, Cl. 568-636.000.

Asanomi, Koji: *See—*
Tanaka, Toshimitsu; Abe, Ryoji; and Asanomi, Koji, 4,541,399, Cl. 123-573.000.

ASEA Aktiebolag: *See—*
Eriksson, Jan Erik; Karlsson, Mats; Kollberg, Sten; and Mansson, Bengt, 4,541,472, Cl. 164-504.000.
Valdemarsson, Stefan, 4,541,289, Cl. 73-862.690.

Ashizawa, Toranosuke: *See—*
Nakada, Takao; Kamimura, Mamoru; and Ashizawa, Toranosuke, 4,542,110, Cl. 501-103.000.

Ashland Oil, Inc.: *See—*
Tolhurst, Gary A.; and Haugse, Albert L., 4,542,049, Cl. 427-388.100.

Asia Oil Company Limited: *See—*
Hirokoh, Nobuyoshi; Kageyama, Yoichi; Nakako, Yukio; and Matsumura, Tetsuo, 4,541,914, Cl. 208-10.000.

Assaf, Gad, to Solmat Systems Ltd. Method of and means for maintaining a halocline in an open body of salt water. 4,541,244, Cl. 60-641.800.

Astec Europe Limited: *See*—
Patel, Dahyabhai C., 4,542,450, Cl. 363-23.000.
AT&T Bell Laboratories: *See*—
Alles, Harold G.; and Kubik, Peter S., 4,542,375, Cl. 340-712.000.
Anderson, Jerry M., 4,541,685, Cl. 350-96.210.
Beckner, Mark W.; and Starr, Thomas J. J., 4,542,380, Cl. 340-825.500.
Beni, Gerardo; Hackwood, Susan; and Hornak, Lawrence A., 4,541,771, Cl. 414-730.000.
Carson, David N., 4,542,534, Cl. 455-208.000.
Cava, Robert J.; and Murphy, Donald W., 4,542,083, Cl. 429-218.000.
Caverly, Lendall R., Jr.; Gleason, Robert F.; Hadfield, Don A.; McNerney, Norman E.; Meade, Daniel A.; Richardson, Alfred G.; Semitros, Nicholas; and Thornton, Martin Q., 4,541,970, Cl. 264-1.500.
Hill, Dwight D., 4,542,456, Cl. 364-200.000.
Huang, Alan; and Knauer, Scott C., 4,542,497, Cl. 370-60.000.
Levinson, Frank H.; and Limb, John O., 4,542,502, Cl. 370-88.000.
Moul, Robert A.; and Thelen, William, 4,542,504, Cl. 370-100.000.
Procyk, Frank J., 4,542,483, Cl. 365-190.000.
Swanson, Eric J., 4,542,304, Cl. 307-353.000.
Voorhoeve, Rudolf J. H., 4,542,006, Cl. 423-365.000.
AT&T Technologies, Inc.: *See*—
Dick, Bernard M., 4,542,439, Cl. 361-405.000.
Kiersarsky, Albert S.; Sauer, Earl S.; Vesperman, William C.; and Wilson, Max K., 4,541,980, Cl. 264-174.000.
Atkielski, John. Boomerang. 4,541,637, Cl. 273-426.000.
Atlantic Richfield Company: *See*—
Dean, Barry D., 4,542,187, Cl. 525-132.000.
Norrgran, Daniel A., 4,541,993, Cl. 423-27.000.
Tanner, David P.; Morel, Don L.; and Gay, Robert R., 4,542,255, Cl. 136-249.000.
Auerweck, Ferdinand J.; Bulgarelli, Donald J.; Roller, Curtis A.; and Varrese, Francis R., to Honeywell Inc. Method of producing a uniform fluid-tight seal between a thin, flexible member and a support and an apparatus utilizing the same. 4,541,282, Cl. 73-715.000.
Augustin, Rainer: *See*—
Elbel, Karl; and Augustin, Rainer, 4,541,843, Cl. 51-298.000.
Aule, Olaf; and Noren, Tommy, to Alfa-Laval AB. Method for heat treatment of milk and the like. 4,542,034, Cl. 426-522.000.
Aurora Equipment Company: *See*—
Nichols, Max, 4,541,344, Cl. 108-108.000.
Avco Corporation: *See*—
Dickey, Thomas A., 4,541,237, Cl. 60-39.281.
Awano, Shunya; Koseki, Kazusuke; and Nishida, Masanori, to Ichikawa Woolen Textile Co., Ltd. Heat resistant pad for use with rear facilities of aluminum extrusion pressing machine. 4,541,264, Cl. 72-257.000.
B. F. Goodrich Company, The: *See*—
Hall, Dale R.; and Jackson, Robert L., 4,542,170, Cl. 523-179.000.
Baba, Fumio, to Fujitsu Limited. Double bootstrapped clock buffer circuit. 4,542,307, Cl. 307-482.000.
Babbitt, Richard W.: *See*—
Stern, Richard A.; and Babbitt, Richard W., 4,542,357, Cl. 333-24.200.
Bacharach Instrument Company: *See*—
Tozier, John E.; Anouchi, Abraham; and Critchlow, Richard, 4,541,988, Cl. 422-94.000.
Backau-Walther Aktiengesellschaft: *See*—
Bechthold, Horst; Fischer, Heinz J.; and Schulte, Wolfgang, 4,541,999, Cl. 423-235.000.
Baer, Edmund: *See*—
Ernst, Gunter; Baer, Edmund; Wurz, Dieter; Dittrich, Hans; and Roller, Wilhelm, 4,541,968, Cl. 261-109.000.
Bagli, Jehan; Bogri, Tibor; Palameta, Bozidar; and Borella, Luis E., to American Home Products Corporation. Pyridinyl substituted ketenemercaptal derivatives. 4,542,140, Cl. 514-332.000.
Bagshaw, David P.; Kast, Michael A.; and Whitehouse, Harry T., to Sunspool Corporation. Check valve and spring to prevent forward and reverse thermosiphoning in solar collector systems. 4,541,412, Cl. 126-419.000.
Bailey, Donald H., to Suburban Tool, Inc. Stacked dimension and deviation calculator apparatus for use with gage blocks. 4,542,473, Cl. 364-560.000.
Baird, William C., Jr.; and Mauldin, Charles H., to Exxon Research and Engineering Co. Catalytic reforming process. 4,541,915, Cl. 208-65.000.
Baker Oil Tools, Inc.: *See*—
Salerni, John V.; and Zachman, James R., 4,541,484, Cl. 166-278.000.
Wetzel, Rodney J.; and Stout, Gregg W., 4,541,486, Cl. 166-297.000.
Baker, Richard W.: *See*—
Roman, Ian C.; and Baker, Richard W., 4,542,010, Cl. 423-579.000.
Balcke-Duerr AG: *See*—
Fickelscher, Kurt G., 4,541,816, Cl. 464-81.000.
Baldvins, Jon O.: *See*—
Peart, Whitcomb S.; and Baldvins, Jon O., 4,541,340, Cl. 101-470.000.
Ballard, Philip M.: *See*—
Bates, Robert N.; and Ballard, Philip M., 4,542,535, Cl. 455-327.000.
Ballato, Arthur, to United States of America, Army. Normal coordinate monolithic crystal filter. 4,542,355, Cl. 333-191.000.
Ballerini, Daniel: *See*—
Vandecasteele, Jean-Paul; Ballerini, Daniel; Lemal, Jeanine; and Le Penru, Yann, 4,542,098, Cl. 435-190.000.
Ballintubber Enterprises Limited: *See*—
Finan, Michael, 4,541,834, Cl. 44-30.000.
Banks, Peter B., to English Electric Valve Company Limited. Method of manufacturing a camera tube faceplate. 4,541,699, Cl. 354-227.100.
Banning, Jurgen, to O. Dorries GmbH. Suction box for dehydrating paper webs. 4,541,896, Cl. 162-363.000.
Barbe, Pierre L. C. C., to Pont-A-Mousson S.A. Gate valve. 4,541,613, Cl. 251-326.000.
Barber, Forest C. Drilling a curved hole. 4,541,423, Cl. 128-92.00E.
Barberis, Giulio: *See*—
Bella, Luigi; Brignolo, Roberto; Barberis, Giulio; and Sposini, Maurizio, 4,542,499, Cl. 370-85.000.
Barfuss, Juergen; Oestreich, Ulrich; Schoeber, Gernot; and Schrey, Wolfgang, to Siemens Aktiengesellschaft. Cable construction. 4,541,686, Cl. 350-96.230.
Barna, Bruce A.: *See*—
Lamparter, Richard A.; Barna, Bruce A.; and Johnsrud, David R., 4,542,239, Cl. 562-487.000.
Barrera, Giorgio, to Officine Meccaniche Pavesi & C. S.p.A. Method and device for forming the rotor winding coils of a dynamoelectric machine. 4,541,170, Cl. 29-597.000.
Barrett, Dave D., Jr. Insulating cementitious mixture and method of use. 4,541,870, Cl. 106-96.000.
Barrois, Claus D., to Koenig & Bauer Aktiengesellschaft. Inking unit. 4,541,339, Cl. 101-349.000.
Barta nee Szalai, Gizella: *See*—
Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nyitrai , Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Visky nee Gombos, Zsuzsanna; and Barta nee Szalai, Gizella, 4,541,955, Cl. 260-330.900.
Bartelink, Dirk J.: *See*—
Biegelsen, David K.; and Bartelink, Dirk J., 4,542,397, Cl. 357-32.000.
Barthelmes, Norbert: *See*—
Hahn, Alfred; Rauch, Werner; and Barthelmes, Norbert, 4,542,521, Cl. 378-155.000.
Bartholomew, Donald D., to Proprietary Technology, Inc. Swivelable quick connector assembly. 4,541,658, Cl. 285-319.000.
Bartholomew, Richard P. Saddle rack. 4,541,535, Cl. 211-96.000.
Barton, Jeffrey N.: *See*—
Reilly, Laurence W., Jr.; and Barton, Jeffrey N., 4,542,234, Cl. 560-38.000.
Bartush, Thomas A., to International Business Machines Corporation. Method for making studs for interconnecting metallization layers at different levels in a semiconductor chip. 4,541,169, Cl. 29-591.000.
BASF Aktiengesellschaft: *See*—
Schupp, Eberhard; Loch, Werner; Osterloh, Rolf; and Ahlers, Klaas, 4,542,173, Cl. 523-414.000.
Schupp, Eberhard; Loch, Werner; Osterloh, Rolf; and Ahlers, Klaas, 4,542,193, Cl. 525-490.000.
Stumpfl, Werner; Bettinger, Gunter; Engel, Friedrich; Fitterer, Horst; Kreimes, Norbert; Pfefferkorn, Dietmar; Schaffer, Norbert; and Schmidts, Kurt, 4,541,587, Cl. 242-197.000.
Bass, Leland J.; Quick, Roy F., Jr.; Shah, Ashwin V.; and Wickwire, Ralph O., to Burroughs Corporation. System for electronically displaying portions of several different images on a CRT screen through respective prioritized viewports. 4,542,376, Cl. 340-724.000.
Bates, Robert N.; and Ballard, Philip M., to U.S. Philips Corporation. R.F. balanced mixer. 4,542,535, Cl. 455-327.000.
Batigne, Jean; Deslandes, Claude; Gillot, Jacques; and Tritten, Paul, to Commissariat a l'Energie Atomique. Method of manufacturing cylindrical ceramic tubes having localized imprints on their inner faces. 4,541,976, Cl. 264-69.000.
Battenfeld Maschinenfabrik GmbH: *See*—
Fillmann, Werner, 4,542,054, Cl. 428-68.000.
Baudino, Michael D., to Medtronic, Inc. Cardiac output monitor. 4,541,433, Cl. 128-668.000.
Baumgartner, Louis; and Meylan, Philippe, to Omega SA. Perpetual calendar mechanism comprising a four year cycle indicator. 4,541,725, Cl. 368-37.000.
Bause, Roland. Electronically controlled fuel injection system. 4,541,272, Cl. 73-118.000.
Baxter, Ronald D.: *See*—
Freud, Paul J.; Baxter, Ronald D.; and Kroninger, Paul M., Jr., 4,542,435, Cl. 361-283.000.
Baxter Travenol Laboratories, Inc.: *See*—
Munsch, John M.; Danielsen, Brant R.; and Miller, Jimmy L., 4,541,829, Cl. 604-80.000.
Bayer Aktiengesellschaft: *See*—
Maurer, Fritz; Homeyer, Bernhard; Becker, Benedikt; and Hanssler, Gerd, 4,542,126, Cl. 514-86.000.
Pfister, Theodor; Eue, Ludwig; Schmidt, Robert R.; and Hanssler, Gerd, 4,541,858, Cl. 71-86.000.
Raue, Roderich; Kuhlthau, Hans-Peter; and Lehment, Klaus-Friedrich, 4,542,223, Cl. 548-455.000.
Raue, Roderich; and Kuhlthau, Hans-Peter, 4,542,224, Cl. 548-455.000.
Sirinyan, Kirkor; Merten, Rudolf; Wolf, Gerhard D.; Giesecke, Henning; Claussen, Uwe; and Ebneth, Harold, 4,542,074, Cl. 428-450.000.
Weissmuller, Joachim; Kramer, Wolfgang; Berg, Dieter; Reinecke, Paul; Brandes, Wilhelm; and Hanssler, Gerd, 4,542,130, Cl. 514-212.000.

BBC Brown, Boveri & Company, Limited: *See*—
Hoarler, Hansulrich, 4,541,785, Cl. 417-407.000.
Horler, Hansulrich, 4,541,784, Cl. 417-407.000.
Lang, Helmut V.; and LeMong, Son, 4,541,366, Cl. 122-441.000.

Beasant, Andrew J.; Orwin, Olaf J. B.; and Fortune, David J., to GIB Precision Limited. Torque limiting clutch. 4,541,512, Cl. 192-56.00R.

Beattie, Patrick J.; and Chase, David O., to John D. Brush & Co., Inc. Portable fire resistant case. 4,541,545, Cl. 220-431.000.

Bechara, Ibrahim S., to Air Products and Chemicals, Inc. Carbamate and carbonate salts of tertiary amines. 4,542,214, Cl. 544-107.000.

Bechthold, Horst; Fischer, Heinz J.; and Schulte, Wolfgang, to Backau-Walther Aktiengesellschaft. Method for removing acidic components including nitrogen oxide from waste gases. 4,541,999, Cl. 423-235.000.

Beck, Lee R.: *See*—
Tice, Thomas R.; Lewis, Danny H.; Cowsar, Donald R.; and Beck, Lee R., 4,542,025, Cl. 424-78.000.

Becker, Benedikt: *See*—
Maurer, Fritz; Homeyer, Bernhard; Becker, Benedikt; and Hanssler, Gerd, 4,542,126, Cl. 514-86.000.

Becker, Erwin; Bier, Wilhelm; Ehrfeld, Wolfgang; and Munchmeyer, Dietrich, to Kernforschungszentrum Karlsruhe GmbH. Method for producing separating nozzle elements. 4,541,977, Cl. 264-102.000.

Becker, Jorgen; Hendricks, Arno; Herchenbach, Horst; Steinbiss, Eberhard; and Rensinghoff, Werner, to Klockner-Humboldt-Deutz AG; and L. & C. Steinmuller GmbH. Method and apparatus for calcining fine grained material. 4,541,245, Cl. 60-648.000.

Becker, Willi, to Arthur Pfeiffer Vakuumtechnik Wetzlar GmbH. Pump with magnetic bearings. 4,541,772, Cl. 415-90.000.

Beckman Instruments, Inc.: *See*—
Giebeler, Robert H., Jr., 4,541,736, Cl. 384-465.000.

Beckmann, Kenneth B. Heat exchanger and method for joining plates thereof. 4,541,480, Cl. 165-79.000.

Beckner, Mark W.; and Starr, Thomas J. J., to AT&T Bell Laboratories. Method and apparatus for graceful preemption on a digital communications link. 4,542,380, Cl. 340-825.500.

Bednarz, Jurgen; and Lindig, Wolfgang, to Siemens Aktiengesellschaft. Metallized molded plastic component housings for shielding against electromagnetic interference fields. 4,542,076, Cl. 428-624.000.

Beecham Group p.l.c.: *See*—
Evans, John M.; Buckingham, Robin E.; and Willcocks, Kenneth, 4,542,149, Cl. 514-422.000.

Behnke, Gert, to Aristo Graphic Systeme GmbH & Co. KG. Digitizing stylus. 4,542,261, Cl. 178-18.000.

Beisser, Jean-Claude, to Societe Nouvelle Transfix. Electrical transformers with improved insulation and coolant guiding. 4,542,362, Cl. 336-60.000.

Bell, Lon E.; and Gruber, William P., to Technar, Incorporated. Temperature sensitive transducer with a resonant bimetal disk. 4,541,731, Cl. 374-117.000.

Bella, Luigi; Brignolo, Roberto; Barberis, Giulio; and Sposini, Maurizio, to cselt centro studi e Laboratori Telecomunicazioni SPA. Distributed control system for multiple random access to the transmission line of a local network for speech and data. 4,542,499, Cl. 370-85.000.

Bellah, Glen R., to J. I. Case Company. Start switch mechanism. 4,541,307, Cl. 74-850.000.

Bellanca, Carmen L.: *See*—
Nevins, Norman; McVay, Robert L.; and Bellanca, Carmen L., 4,542,053, Cl. 428-48.000.

Belli, Aldo: *See*—
Piccolo, Oreste; Belli, Aldo; Villa, Giovanni; Zen, Enrico; and Citterio, Attilio, 4,542,233, Cl. 560-21.000.

Beloit Corporation: *See*—
Frye, Kenneth G.; and Gill, Michael L., 4,541,585, Cl. 242-66.000.

Beltrame, Leonardo; and Granziera, Attilio, to Beltrame, Leonardo, a part interest. Acoustic unit base for electropneumatic horns. 4,541,505, Cl. 181-179.000.

Belviso, Vincent; and Wicks, William H., to Cyclonic Equipment Co., Inc. Coin-operated, elapsed time apparatus. 4,541,519, Cl. 194-1.00N.

Bend Research, Inc.: *See*—
Roman, Ian C.; and Baker, Richard W., 4,542,010, Cl. 423-579.000.

Bengt, Gustaf F., to EKA AB. Process of reducing the oxygen content in gas mixtures. 4,541,997, Cl. 423-219.000.

Beni, Gerardo; Hackwood, Susan; and Hornak, Lawrence A., to AT&T Bell Laboratories. Robot having magnetic proximity sensor and manufacturing method using same. 4,541,771, Cl. 414-730.000.

Benjamin, Albert S.: *See*—
Phillips, Gary M.; and Benjamin, Albert S., 4,542,080, Cl. 429-174.000.

Benjamin, James A.: *See*—
Schutten, Herman P.; Benjamin, James A.; and Lade, Robert W., 4,542,396, Cl. 357-23.400.

Bennett, Edward M.: *See*—
Clark, Charles J.; and Bennett, Edward M., 4,541,947, Cl. 252-307.000.

Benzing, William M.; Patterson, Waldo C.; and Cadle, Lawrence C., to Conoco Inc. Method and apparatus for shear wave logging. 4,542,487, Cl. 367-31.000.

Berg, Cyrus. Lifting lug for shipping containers. 4,541,662, Cl. 294-82.100.

Berg, Dieter: *See*—
Weissmuller, Joachim; Kramer, Wolfgang; Berg, Dieter; Reinecke, Paul; Brandes, Wilhelm; and Hanssler, Gerd, 4,542,130, Cl. 514-212.000.

Berg, Lloyd T.; and Flowers, Stephen A. Folded carton beverage accessories dispenser. 4,541,526, Cl. 206-44.120.

Berger, Harvey L.; Ericson, A. Earle; and Levine, Carl, to Sono-Tek Corporation. Ultrasonic liquid atomizer, particularly for high volume flow rates. 4,541,564, Cl. 239-102.000.

Bergeron, Hervin J., Jr., to Ledet, Stephen J., Jr.; and Elder, James D., part interest to each. Air circulation system for generally enclosed structures. 4,541,479, Cl. 165-45.000.

Bernauer, Joachim, to Albert-Frankenthal AG. Method and device for controlling the supply of ink to the inking units of a multi-color printing press. 4,541,336, Cl. 101-211.000.

Bernhart, Claude; Cautreels, Werner; and Gautier, Patrick, to SANOFI. Derivatives of γ-butyrolactone with an anti-arrythmic activity and compositions. 4,542,134, Cl. 514-236.000.

Bernstein, Ira M. Dental appliance having enhanced occlusal durability. 4,541,800, Cl. 433-6.000.

Bertolacini, Ralph J.; Hirschberg, Eugene H.; and Modica, Frank S., to Standard Oil Company, The. Catalyst for removing sulfur oxides from a gas. 4,542,116, Cl. 502-65.000.

Bery, Yuri A., to Weyerhaeuser Company. Structural and surface properties tester for paper. 4,541,273, Cl. 73-150.00R.

Bettinger, Gunter: *See*—
Stumpfi, Werner; Bettinger, Gunter; Engel, Friedrich; Fitterer, Horst; Kreimes, Norbert; Pfefferkorn, Dietmar; Schaffer, Norbert; and Schmidts, Kurt, 4,541,587, Cl. 242-197.000.

Betz Laboratories, Inc.: *See*—
Muccitelli, John A., 4,541,932, Cl. 210-750.000.

Beuther, Harold; Kobylinski, Thaddeus P.; Lee, Win-Chung; and Schmid, Bruce K., to Gulf Research & Development Corporation. Coal liquefaction process using low grade crude oil. 4,541,916, Cl. 208-8.0LE.

Biaschim S.p.A.: *See*—
Piccolo, Oreste; Belli, Aldo; Villa, Giovanni; Zen, Enrico; and Citterio, Attilio, 4,542,233, Cl. 560-21.000.

BICC plc: *See*—
Cooke, Edward I.; Pinnington, Arthur J.; and Smeatham, Charles A., 4,541,979, Cl. 264-174.000.

Biegelsen, David K.; and Bartelink, Dirk J., to Xerox Corporation. Self aligning small scale integrated circuit semiconductor chips to form large area arrays. 4,542,397, Cl. 357-32.000.

Bier, Wilhelm: *See*—
Becker, Erwin; Bier, Wilhelm; Ehrfeld, Wolfgang; and Munchmeyer, Dietrich, 4,541,977, Cl. 264-102.000.

Bigbee, Marvin L.: *See*—
Hadley, Howard C.; and Bigbee, Marvin L., 4,541,549, Cl. 222-143.000.

Bigbie, Burke N.; and Boyd, Gilbert R., to Joy Manufacture Company. Adapter for a wellhead. 4,541,490, Cl. 166-379.000.

Binoeder, Peter P.; and Whitacre, James B., to Burroughs Corporation. Adjustable system for skew comparison of digital signals. 4,542,505, Cl. 371-1.000.

Birdwell, J. C. Mud pump. 4,541,779, Cl. 417-62.000.

Bistrian, Bruce R.: *See*—
Moldawer, Lyle L.; Blackburn, George L.; and Bistrian, Bruce R., 4,542,017, Cl. 424-101.000.

Bittler, Dieter; Laurent, Henry; Nickisch, Klaus; Weichert, Rudolf; and Casals-Stenzel, Jorge, to Schering Aktiengesellschaft. 17α-Pregn-4-ene-3-oxo-21-carboxylic acid esters, process for the preparation thereof, and use thereof as medicinal agents. 4,542,128, Cl. 514-177.000.

Bittler, Dieter: *See*—
Nickisch, Klaus; Bittler, Dieter; Laurent, Henry; Wiechert, Rudolf; and Losert, Wolfgang, 4,542,024, Cl. 514-178.000.

Bizerba-Werke Wilhelm Kraut GmbH & Co. KG: *See*—
Maurer, Albrecht; and Butz, Alois, 4,541,319, Cl. 83-707.000.

Biziere, Kathleen: *See*—
Carminati, Paolo; Biziere, Kathleen; and Hallot, Andre , 4,542,136, Cl. 514-252.000.

Black, Joseph; Foster, Mark A.; and Luard, Nicholas G., to University of Bath, The. Vibration damping supports. 4,541,134, Cl. 5-118.000.

Black, Maurice D., Jr., to Rockwell International Corporation. Low inductance magnetic wiggler. 4,542,510, Cl. 372-2.000.

Blackburn, George L.: *See*—
Moldawer, Lyle L.; Blackburn, George L.; and Bistrian, Bruce R., 4,542,017, Cl. 424-101.000.

Blais, Gilbert L. An X-ray film cassette holder. 4,542,522, Cl. 378-167.000.

Blattler, Walter A.; Lambert, John M.; and Senter, Peter D., to Dana-Farber Cancer Institute, Inc. Acid-cleavable compound. 4,542,225, Cl. 548-473.000.

Blaupunkt-Werke GmbH: *See*—
Hopf, Reinhard, 4,542,525, Cl. 381-56.000.

Blauschild, Robert A., to Signetics Corporation. Impedance buffer with reduced settling time. 4,542,305, Cl. 307-353.000.

Blenkush, Brian J., to Colder Products Company. Two-way uncoupling valve assembly. 4,541,457, Cl. 137-614.060.

Bletz, Walter; Machmerth, Herbert; and Mandler, Walter, to Ernst Leitz Wetzlar GmbH. Method and devices for transferring electrical signal information between a photographic lens and camera. 4,541,700, Cl. 354-286.000.

Block Drug Co., Inc.: *See*—
Chang, Tiang-Shing; Zientek, Lucy J.; and Viningauz, Arthur, 4,542,168, Cl. 523-118.000.

Block, Jacob, to W. R. Grace & Co. Completion and workover fluid. 4,541,485, Cl. 166-281.000.

Blohm + Voss AG: *See*—
Sadler, Karl O.; and Worzeck, Jonny, 4,541,323, Cl. 89-41.140.

Bloom, Harold T.: *See—*
Hyde, Rebecca A.; Bloom, Harold T.; and Morris, Thomas E., 4,541,825, Cl. 493-44.000.

Bloomfield, Michael K.: *See—*
Walker, William B.; Justus, Paul D.; and Bloomfield, Michael K., 4,541,768, Cl. 414-535.000.

Bobart, Kevin L.; Samson, Robert S.; and Shakib, Iraj D., to International Business Machines Corporation. Initializing apparatus for daisy wheel printer. 4,541,746, Cl. 400-144.200.

Bobst S.A.: *See—*
Polic, Georg, 4,541,828, Cl. 493-468.000.

Boby, Joel, to Societe Anonyme Dite: les Cables de Lyon. Device protecting a coaxial cable against high-powered, low-frequency spurious pulses. 4,542,358, Cl. 333-246.000.

Boden, Richard M.: *See—*
Sprecker, Mark A.; Schreiber, William L.; Fujioka, Futoshi; Boden, Richard M.; Vock, Manfred H.; Whelan, Patrick; and Hanna, Marie R., 4,541,949, Cl. 252-522.00R.

Bodolus, Christopher L.; and Woodhead, David A., to Standard Oil Company, The. Process for the preparation of novel rubber-modified thermoplastic resin compositions using multiple feed streams. 4,542,189, Cl. 525-285.000.

Bodros, Christian Y.; Le Besco, Joel V.; and Sichez, Yves R. High bit-rate coupler between a PCM channel multiplex and a packet switching unit. 4,542,498, Cl. 370-60.000.

Boehm, Leah: *See—*
Susman, Sherman; Boehm, Leah; Volin, Kenneth J.; and Delbacq, Charles J., 4,542,108, Cl. 501-40.000.

Boeing Company, The: *See—*
Anglin, Jeanne M.; Edwards, Richard R.; and Thomas, John E., 4,542,056, Cl. 428-116.000.
Greiert, Alfred H., 4,541,673, Cl. 308-3.00R.

Bognar, Josef: *See—*
Muhlberger, Horst; Prinz, Bruno; Wunder, Wolf; Schafer, Ulrich; and Bognar, Josef, 4,541,878, Cl. 148-139.000.

Bogri, Tibor: *See—*
Bagli, Jehan; Bogri, Tibor; Palameta, Bozidar; and Borella, Luis E., 4,542,140, Cl. 514-332.000.

Boland, Richard C., to Standard Oil Company, The. Double layer energy storage device. 4,542,444, Cl. 361-433.000.

Bolliger, Georg: *See—*
Kobel, Hans; Sanglier, Jean-Jacques; Tscherter, Hans; and Bolliger, Georg, 4,542,135, Cl. 514-250.000.

Bollinger, Heribert: *See—*
Hollmann, Siegfried; Hoch, Dieter; and Bollinger, Heribert, 4,541,442, Cl. 132-9.000.

Bolton, James O., to Commonwealth of Australia, The. Roll measuring device. 4,541,590, Cl. 244-3.200.

Bomatic, Inc.: *See—*
Hestehave, Borge; and Hestehave, Kjeld, 4,541,529, Cl. 206-510.000.

Boone, Jacob J.; and Stoudt, George W., to Nordson Corporation. Method and apparatus for cooling and coating the inside seam of a welded can body. 4,542,045, Cl. 427-236.000.

Borella, Luis E.: *See—*
Bagli, Jehan; Bogri, Tibor; Palameta, Bozidar; and Borella, Luis E., 4,542,140, Cl. 514-332.000.

Borg-Warner Chemicals, Inc.: *See—*
Falk, John C.; and Kliever, Leland B., 4,542,179, Cl. 524-432.000.
Walton, William B., 4,541,483, Cl. 166-263.000.

Borghi, Angelo; Pallanza, Rosa; Coronelli, Carolina; and Cassani, Giovanni, to Gruppo Lepetit S.p.A. Teichomycin A_2 pure single factors 1, 2, 3, 4 and 5 and method for their production. 4,542,018, Cl. 424-119.000.

Borowski, Stanley J.; and Post, Thomas A., to SmithKline Beckman Corporation. Method for preparing 6-chloro-N-methyl-2,3,4,5-tetrahydro-1H-3-benzazepine. 4,541,954, Cl. 260-239.0BB.

Boser, Ronald J.; and Martin, Michael T., to Yoshida Kogyo K. K. Method of and apparatus for attaching fly strips to a slide fastener chain. 4,541,352, Cl. 112-265.200.

Bosquain, Maurice; Grenier, Maurice; Hay, Leon; Lapeyre, Paul; Lehman, Jean-Yves; Petit, Pierre; and Sauty, Pierre, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Reactor and apparatus for purifying by adsorption. 4,541,851, Cl. 55-208.000.

Botset, Richard A.: *See—*
Sachleben, Harold G.; Hubbard, David W.; Botset, Richard A.; and Hardage, Thomas B., 4,541,576, Cl. 242-18.0PW.

Bowen, David R.: *See—*
Van Loveren, Augustinus G.; Hanna, Marie R.; Luccarelli, Domenick, Jr.; Bowen, David R.; Vock, Manfred H.; and Wiegers, Wilhelmus J., 4,541,950, Cl. 252-522.00R.

Bowers, William S., to Cornell Research Foundation, Inc. Anti-juvenile hormones. 4,542,150, Cl. 514-456.000.

Boyarsky, David: *See—*
Singh, Bawa; and Boyarsky, David, 4,542,321, Cl. 315-111.810.

Boyd, Francis M.; and Fireman, Kenneth A. Knife. 4,541,175, Cl. 30-161.000.

Boyd, Gilbert R.: *See—*
Bigbie, Burke N.; and Boyd, Gilbert R., 4,541,490, Cl. 166-379.000.

Boyer, Richard M., to Signetics Corporation. Low-impedance voltage reference. 4,542,331, Cl. 323-313.000.

Bradbrook, John D.: *See—*
Wainwright, Ronald C.; Goy, Nicholas M.; Anderson, John D.; Pettigrew, Robert M.; and Bradbrook, John D., 4,541,695, Cl. 350-429.000.

Brady, Douglas M., to GTE Lenkurt Incorporated. Echo canceller dynamic range extension. 4,542,265, Cl. 179-170.200.

Brand-Rex Company: *See—*
Johnston, James J., 4,541,680, Cl. 339-98.000.

Brandes, Wilhelm: *See—*
Weissmuller, Joachim; Kramer, Wolfgang; Berg, Dieter; Reinecke, Paul; Brandes, Wilhelm; and Hanssler, Gerd, 4,542,130, Cl. 514-212.000.

Brandyberry, Robert E.; Forbes, Mark M.; Gloyeski, David D.; Greafnitz, Russell F.; Phillips, Glen R.; Straw, Robert L.; Stricker, Kevin L.; Szabela, William A.; Webeck, Richard R.; Mayfield, Glenn A.; and Vollmer, William L., to Duncan Electric Company, Inc. Programmable demand register with two way communication through an optical port and external reading devices associated therewith. 4,542,469, Cl. 364-483.000.

Brasky, Joseph L. Heating panel assembly with improved electrical connection means. 4,542,282, Cl. 219-345.000.

Braud: *See—*
Deux, Alain; and Merant, Jean C., 4,541,652, Cl. 280-672.000.

Braun, Ernst; and Braun, Gert, to Halbach & Braun. Conveyor trough, particularly for scraper chain conveyors. 4,541,525, Cl. 198-735.000.

Braun, Gert: *See—*
Braun, Ernst; and Braun, Gert, 4,541,525, Cl. 198-735.000.

Braun, Norman L. Recumbent bicycle. 4,541,647, Cl. 280-234.000.

Brcich, Joseph A.; Levy, Roy J.; Madewell, Jimmy; and Threewitt, N. Bruce, to Advanced Micro Devices, Inc. Apparatus for controlling access to a memory. 4,542,454, Cl. 364-200.000.

Brechtelsbauer, Jeffrey H.: *See—*
Hickman, John R.; Kriska, Nicholas J.; Brechtelsbauer, Jeffrey H.; Mediate, Bruno A.; and Rotheiser, Jordan I., 4,541,541, Cl. 220-253.000.

Breidenbaugh, Paul M. Environmental protection dredging system for separating solids and liquid. 4,541,927, Cl. 210-122.000.

Breitscheidel, Hans-Ulrich; Anshen, Walter H.; and Kautz, Rudolf, to Dynamit Nobel Aktiengesellschaft. Hammock. 4,542,057, Cl. 428-126.000.

Brereton, Colin: *See—*
Burgess, Paul E. A.; and Brereton, Colin, 4,541,911, Cl. 204-253.000.

Bresak, Ann F.; and Tolgyesi, Eva, to Gillette Company, The. Hair treating composition. 4,542,014, Cl. 424-70.000.

Brey, Larry A.: *See—*
Cadwell, Donald E.; and Brey, Larry A., 4,542,089, Cl. 430-276.000.

Breynaert, Dirk: *See—*
Verfaillie, Guido A. M.; and Breynaert, Dirk, 4,542,347, Cl. 329-124.000.

Brichima S.p.A.: *See—*
Maggioni, Paolo; Minisci, Francesco; and Correale, Mariano, 4,542,229, Cl. 549-462.000.

Bridgestone Cycle Co., Ltd.: *See—*
Takamiya, Kikuzo; and Todoroki, Hiroshi, 4,541,648, Cl. 280-281.00R.

Bridgestone Tire Company Limited: *See—*
Nakamura, Masao; and Karato, Kenji, 4,541,467, Cl. 152-548.000.

Brignolo, Roberto: *See—*
Bella, Luigi; Brignolo, Roberto; Barberis, Giulio; and Sposini, Maurizio, 4,542,499, Cl. 370-85.000.

British Aerospace PLC: *See—*
Marlow, Christopher I.; Wiltshire, Anthony R.; and Hulme, Ivan E., 4,541,886, Cl. 156-230.000.

British Industrial Sand Limited: *See—*
Watkins, Paul; and Scott, John W., 4,542,003, Cl. 423-340.000.

British Petroleum Company, p.l.c., The: *See—*
Gregory, Reginald; and Westlake, David J., 4,542,250, Cl. 585-467.000.
Morris, George E.; Nay, Barry; and Stewart, David G., 4,542,117, Cl. 502-66.000.

British Steel Corporation: *See—*
Hold, Anthony C., 4,542,297, Cl. 250-360.100.

Broadband Engineering, Inc.: *See—*
Ellis, William H.; and Wise, Leo C., Jr., 4,542,437, Cl. 361-386.000.

Broadhead, James H.; Wilbur, Lawrence A.; and Sams, Ivan E., to Syntex (U.S.A.) Inc. Patient support. 4,541,671, Cl. 297-330.000.

Brokmann, Manfred. Connection for strap. 4,541,150, Cl. 24-265.00C.

Bron, Dan. Liquid proportioning system. 4,541,450, Cl. 137-99.000.

Brooks, Robert E., to TRW Inc. Signal processing system and method. 4,541,687, Cl. 350-162.120.

Brother Kogyo Kabushiki Kaisha: *See—*
Imaizumi, Mamoru; Fujiwara, Takashi; and Kobayashi, Masanari, 4,541,747, Cl. 400-144.200.
Kawaguchi, Hideo; and Nomura, Etuzo, 4,541,347, Cl. 112-121.110.

Brothers, William H.: *See—*
Brothers, William S.; and Brothers, William H., 4,541,443, Cl. 132-75.600.

Brothers, William S.; and Brothers, William H. Abrading/smoothing tool. 4,541,443, Cl. 132-75.600.

Brown, Robert J. S., to Chevron Research Company. Computer-controlled, portable pulsed NMR instrument and method of use wherein depolarization is ultrashortened using pseudo randomly spaced and oriented RF depolarization pulses. 4,542,343, Cl. 324-307.000.

Brown, William F.: *See—*
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Brucker, Rainer: *See*—
Sommer, August; Brucker, Rainer; Heitmann, Wilhelm; and Wozny, Norbert, 4,541,897, Cl. 203-19.000.
Bruker-Franzen Analytik GmbH: *See*—
Odernheimer, Bernhard, 4,541,268, Cl. 73-23.000.
Brule, Paul L., to LaRos Equipment Company. Rotary separator. 4,541,531, Cl. 209-664.000.
Bruning, John W.; and Fuller, Stephen C., to Tektronix, Inc. Ink jet printer purging device and process. 4,542,390, Cl. 346-140.00R.
Bruno, Michael R. Jig for framed wooden panels. 4,541,618, Cl. 269-41.000.
Brunton Company, The: *See*—
Kramer, Melvin G., 4,542,464, Cl. 364-457.000.
Brust, David P., to Eastman Kodak Company. Use of reflecting agent in yellow dye image-providing material layer. 4,542,087, Cl. 430-220.000.
Bryce, William D., Jr., to USM Corporation. Easily removed blind rivet. 4,541,761, Cl. 411-34.000.
Brzezinski, Donald E.; and Kadue, Christy C., to Johnson Service Company. Damper seal apparatus. 4,541,328, Cl. 98-121.200.
Buchanan, Gregory S.; and DeFazio, John J., to International Business Machines Corporation. Fault testing a clock distribution network. 4,542,509, Cl. 371-61.000.
Buchel, Winfried: *See*—
Fell, Wolfgang; Zahn, Heinrich; Gunschmann, Peter; and Buchel, Winfried, 4,541,557, Cl. 226-191.000.
Buckingham, Robin E.: *See*—
Evans, John M.; Buckingham, Robin E.; and Willcocks, Kenneth, 4,542,149, Cl. 514-422.000.
Buckley, Richard D., to Westinghouse Electric Corp. Method of making an electrical transformer. 4,541,171, Cl. 29-605.000.
Buhl, Robert F.: *See*—
Marsh, Glenn A.; and Buhl, Robert F., 4,541,278, Cl. 73-592.000.
Bulgarelli, Donald J.: *See*—
Auerweck, Ferdinand J.; Bulgarelli, Donald J.; Roller, Curtis A.; and Varrese, Francis R., 4,541,282, Cl. 73-715.000.
Buran, Ulrich; Fischer, Manfred; and Neuehauser, Hans J., to Goetze AG. Spray powder for the manufacture of wear resistant and temperature resistant coatings. 4,542,111, Cl. 501-127.000.
Burgess, Paul E. A.; and Brereton, Colin, to Imperial Chemical Industries plc. Method of assembling a filter press type electrolytic cell. 4,541,911, Cl. 204-253.000.
Burke, James S.; Miller, David L.; and Fisher, Edmund A., to Cameron Iron Works, Inc. Gate valve. 4,541,449, Cl. 137-72.000.
Burr-Brown Corporation: *See*—
Lillis, William J., 4,542,368, Cl. 340-347.0CC.
Burroughs Corporation: *See*—
Bass, Leland J.; Quick, Roy F., Jr.; Shah, Ashwin V.; and Wickwire, Ralph O., 4,542,376, Cl. 340-724.000.
Binoeder, Peter P.; and Whitacre, James B., 4,542,505, Cl. 371-1.000.
Mortensen, David J.; and Sheth, Jayesh V., 4,542,457, Cl. 364-200.000.
Burtin, Jean: *See*—
Van Humbeeck, Freddy J.; Burtin, Jean; and Van Meenen, Johnny P., 4,541,317, Cl. 83-34.000.
Bussiere, Jean: *See*—
Cielo, Paolo G.; and Bussiere, Jean, 4,541,280, Cl. 73-603.000.
Butcher, Ian; Carrick, Gordon S.; and Hillman, Kevin P., to Thomas J. Lipton Inc. Confection products, and processes for their preparation. 4,542,028, Cl. 426-100.000.
Butt, Sheldon H., to Olin Corporation. High density packages. 4,542,259, Cl. 174-52.0FP.
Butz, Alois: *See*—
Maurer, Albrecht; and Butz, Alois, 4,541,319, Cl. 83-707.000.
Buzak, Thomas S., to Tektronix, Inc. Electro-optic switching system using circularly polarized light. 4,541,691, Cl. 350-335.000.
Byers, Edward R. Drive assembly for an astronomical telescope. 4,541,294, Cl. 74-89.140.
Byland, Henry L. Stretch film package wrapping method and apparatus. 4,541,225, Cl. 53-441.000.
C. Deilmann AG: *See*—
Grumpelt, Heinrich; and Jaroch, Johannes, 4,541,345, Cl. 110-229.000.
C. Uyemura & Co., Ltd.: *See*—
Kinoshita, Akemi; Araki, Ken; Nawafune, Hidemi; and Mizumoto, Shozo, 4,541,902, Cl. 204-1.00T.
Cabrol, Lucien. Aircraft providing with a lift structure incorporating multiple superposed wings. 4,541,593, Cl. 244-45.00R.
Cadle, Lawrence C.: *See*—
Benzing, William M.; Patterson, Waldo C.; and Cadle, Lawrence C., 4,542,487, Cl. 367-31.000.
Cadwell, Donald E.; and Brey, Larry A., to Minnesota Mining and Manufacturing Company. Lithographic substrate and its process of manufacture. 4,542,089, Cl. 430-276.000.
Calato, Joseph S., to J. D. Calato Manufacturing Co., Inc. Musical instrument mallet and method of making the same. 4,541,322, Cl. 84-422.00S.
Caldwell, Joseph M. Compound archery bow. 4,541,401, Cl. 124-24.00R.
California Institute of Technology: *See*—
Rowlette, John J., 4,542,082, Cl. 429-210.000.
California Nickel Corporation: *See*—
Lowenhaupt, E. Harris; Litz, John E.; and Hoe, Dennis L., 4,541,868, Cl. 75-101.00R.
Lowenhaupt, E. Harris; Litz, John E.; and Howe, Dennis L., 4,541,994, Cl. 423-150.000.
Calvert, Scott A.; Gelin, Robert J.; and Aberegg, Dale, to Owens-Corning Fiberglas Corporation. Bathtub assembly. 4,541,130, Cl. 4-593.000.
Calvet, Gerard: *See*—
Cannaux, Guy; and Calvet, Gerard, 4,541,413, Cl. 126-422.000.
Camco, Incorporated: *See*—
Johnston, Russell A., 4,541,482, Cl. 166-117.500.
Cameron Iron Works, Inc.: *See*—
Burke, James S.; Miller, David L.; and Fisher, Edmund A., 4,541,449, Cl. 137-72.000.
Williams, Bolie C., III, 4,541,639, Cl. 277-73.000.
Williams, Leonard E., Jr., 4,541,606, Cl. 251-1.300.
Campbell, Simon F.; Jaxa-Chamiec, Albert A.; and Roberts, David A., to Pfizer Inc. Cardiac stimulating cyclic sulfonamido substituted 4-piperidino-quinazoline derivatives, compositions, and method of use therefor. 4,542,132, Cl. 514-222.000.
Canada, Her Majesty the Queen in right of: *See*—
Pace, Paul W.; Mathieu, Pierre R.; and Cruickshank, James M., 4,542,529, Cl. 372-86.000.
Canadian Patents & Development Ltd.: *See*—
Cielo, Paolo G.; and Bussiere, Jean, 4,541,280, Cl. 73-603.000.
Whitehead, Lorne A., 4,542,449, Cl. 362-330.000.
Caner, Ali R.; and Spencer, Kenneth B., to American Can Company. Hot filled container. 4,542,029, Cl. 426-127.000.
Cannaux, Guy; and Calvet, Gerard, to Compagnie Francaise de Raffinage. Pump and control unit for a solar heating installation for a water tank, and particularly for a swimming pool. 4,541,413, Cl. 126-422.000.
Canon Kabushiki Kaisha: *See*—
Kataoka, Hiroyuki; Yamada, Masanori; and Suzuki, Nobuyuki, 4,541,703, Cl. 354-415.000.
Kishi, Hirotoshi, 4,541,706, Cl. 355-3.00R.
Knechtel, Wilhelm, 4,541,705, Cl. 355-3.0FU.
Miyagawa, Akira, 4,542,391, Cl. 346-140.00R.
Nagane, Hiromichi, 4,542,414, Cl. 358-285.000.
Odagawa, Kazuyoshi, 4,541,582, Cl. 242-55.200.
Shigenobu, Michio, 4,541,708, Cl. 355-3.0FU.
Takahashi, Yuji, 4,541,711, Cl. 355-14.00R.
Tazaki, Shigemitsu, 4,542,384, Cl. 346-33.00R.
Toganoh, Shigeo; and Arai, Ryuichi, 4,542,059, Cl. 428-141.000.
Yoshinaga, Kenji, 4,541,707, Cl. 355-3.0FU.
Yuguchi, Naoki; and Kawasaki, Keiichi, 4,541,625, Cl. 271-42.000.
Capuano, Italo A.; and DeFelice, Diane L., to Olin Corporation. Electrochemical chlorine dioxide process. 4,542,008, Cl. 423-477.000.
Cardarelli, Nathan F.; and Kanakkanatt, Sebastian V., to Unique Technologies, Inc. Tin steroids and their use as antineoplastic agents. 4,541,956, Cl. 260-397.100.
Carlozzi, Gerard S.: *See*—
Prosl, Frank R.; Skakoon, James G.; Carlozzi, Gerard S.; and Infusaid Corporation, 4,541,429, Cl. 604-249.000.
Carlson, Gary M.; and Wickert, Frank A., to SCM Corporation. Composite low temperature cure latexes. 4,542,180, Cl. 524-512.000.
Carminati, Paolo; Biziere, Kathleen; and Hallot, Andre , to Sanofi. 2-(1-Piperazinyl) pyrimidines, their salts and pharmaceutical compositions containing them. 4,542,136, Cl. 514-252.000.
Carobbi, Renato: *See*—
Filippini, Andrea; and Carobbi, Renato, 4,542,161, Cl. 521-53.000.
Carra' , Sergio: *See*—
Santacesaria, Elio; Codignola, Franco; Gelosa, Davino; and Carra' , Sergio, 4,542,254, Cl. 585-828.000.
Carrick, Gordon S.: *See*—
Butcher, Ian; Carrick, Gordon S.; and Hillman, Kevin P., 4,542,028, Cl. 426-100.000.
Cars & Concepts, Inc.: *See*—
Draper, David L.; and McKee, Gerald D., 4,541,665, Cl. 296-218.000.
Carson, David N., to AT&T Bell Laboratories. Single-sideband FM. 4,542,534, Cl. 455-208.000.
Carter, J. Warne, to Ameron Inc. Apparatus for longitudinally reinforcing continuously generated plastic pipe. 4,541,887, Cl. 156-431.000.
Carusillo, Steven J., to Johnson Service Company. Linearized capacitive pressure transducer. 4,542,436, Cl. 361-283.000.
Casals-Stenzel, Jorge: *See*—
Bittler, Dieter; Laurent, Henry; Nickisch, Klaus; Weichert, Rudolf; and Casals-Stenzel, Jorge, 4,542,128, Cl. 514-177.000.
Case, Allen W., Jr.; Ringwall, Carl G.; and Pollick, Michael L., to General Electric Company. Microvector control for edge and joint following. 4,542,279, Cl. 219-124.340.
Cassani, Giovanni: *See*—
Borghi, Angelo; Pallanza, Rosa; Coronelli, Carolina; and Cassani, Giovanni, 4,542,018, Cl. 424-119.000.
Cassat, Robert, to Rhone-Poulenc SA. Metallizable, essentially isotropic polymeric substrates well adopted for printed circuits. 4,541,894, Cl. 162-138.000.
Cassey, Graham E.: *See*—
Shadbolt, Philip; and Cassey, Graham E., 4,542,052, Cl. 428-40.000.
Castaldo, Louis J.: *See*—
Marletta, Michael, 4,542,445, Cl. 362-96.000.
Castarede, Armand, to Regie Nationale des Usines Renault. Process and device for the rapid warmup and thermal regulation of the lubricating oil of an internal combustion engine. 4,541,368, Cl. 123-41.330.
Castel, Yvon; and Iato, Michel, to Societe Nationale Elf Aquitaine (Production) Tour Aquitaine. Device and process for lowering a

connector suspended from guide line to a guide column installed on an underwater station. 4,541,754, Cl. 405-168.000.

Castel, Yvon; and Iato, Michel, to Societe Nationale Elf Aquitaine (Production) Tour Aquitaine. Device and process for lowering and connecting the four guide lines to guide posts of an underwater station. 4,541,755, Cl. 405-195.000.

Castolin S.A.: *See—*
Pecci, Michel, 4,541,474, Cl. 164-46.000.

Caterpillar Tractor Co.: *See—*
Gibson, Dennis H., 4,541,391, Cl. 123-500.000.
Riediger, Craig W.; Mangus, Ervin E.; Simmons, Gerald P.; and Knock, Anthony J., 4,541,497, Cl. 180-6.480.

Caudill, Charles, Jr., to General Motors Corporation. Method of manufacturing a vehicle seat cover. 4,541,885, Cl. 156-220.000.

Caugant, Jean; and Dale, Jacques, to Thomson CSF. Load-bearing telescopic slide assembly and X-ray installation equipped therewith. 4,541,293, Cl. 74-89.180.

Cautreels, Werner: *See—*
Bernhart, Claude; Cautreels, Werner; and Gautier, Patrick, 4,542,134, Cl. 514-236.000.

Cava, Robert J.; and Murphy, Donald W., to AT&T Bell Laboratories. Nonaqueous cell using mixed metal oxide positive electrode. 4,542,083, Cl. 429-218.000.

Cavanagh, Patrick E., to Maghemite Inc. Permanent magnet field diverted to do useful work. 4,542,361, Cl. 335-230.000.

Caverly, Lendall R., Jr.; Gleason, Robert F.; Hadfield, Don A.; McNerney, Norman E.; Meade, Daniel A.; Richardson, Alfred G.; Semitros, Nicholas; and Thornton, Martin Q., to AT&T Bell Laboratories. Method for fabricating a cable core including optical fibers. 4,541,970, Cl. 264-1.500.

Cecil, Dimitrios G. Resistance spot welding gun with weld quality detection feature. 4,542,277, Cl. 219-109.000.

Celanese Corporation: *See—*
Arons, Richard M., 4,541,973, Cl. 264-60.000.
Dougherty, Edward F.; and Scates, Mark O., 4,542,231, Cl. 560-4.000.
Hagedorn, Scott, 4,542,100, Cl. 435-253.000.
Hyde, Rebecca A.; Bloom, Harold T.; and Morris, Thomas E., 4,541,825, Cl. 493-44.000.
Lowery, James J.; Plotkin, Neil D.; and Robinson, Jack, 4,541,981, Cl. 264-209.100.

Centre de Recherches Metallurgiques-Centrum Voor Research in de Metallurgie: *See—*
Pirlet, Robert A., 4,541,723, Cl. 356-376.000.

Centre National de la Recherche Scientifique: *See—*
Chevalet, Jean; and Reeves, Robert, 4,542,501, Cl. 370-85.000.

Centre National d'Etudes Spatiales: *See—*
Scheller, Alfred K., 4,541,238, Cl. 60-204.000.

CEP Continental Engineering Products Co., Ltd.: *See—*
Pudwill, Horst, 4,541,142, Cl. 15-323.000.

Cerovsky, Karel: *See—*
Dvorsky, Drahomir; and Cerovsky, Karel, 4,542,217, Cl. 544-335.000.

Chabata, Sueji; Nakano, Keiji; Ito, Kichizo; Ueda, Katsuhiko; Iizuka, Hirokazu; Miyako, Hisao; and Fukagawa, Katsumi, to Fujikura Ltd.; and Tokyo Shibaura Denki Kabushiki Kaisha. Self-bonding enameled wire and hermetic compressor motor using the same. 4,542,064, Cl. 428-383.000.

Chadwick, William R.; and Rose, Conrad M., to United States of America, Navy. Guidance law to improve the accuracy of tactical missiles. 4,541,591, Cl. 244-3.150.

Chakrabarti, Jiban K.; and Hotten, Terrence M., to Lilly Industries Limited. Substituted diazolo[b][1,5]benzodiazepines and their use as CNS agents. 4,542,131, Cl. 514-220.000.

Chakravarti, Satya N.; Garbarino, Paul L.; and Miller, Donald A., to International Business Machines Corporation. Testing method and structure for leakage current characterization in the manufacture of dynamic RAM cells. 4,542,340, Cl. 324-158.00R.

Chandhoke, Mohanjit S.; and Duke, Michael, to Harris Graphics Corporation. Apparatus for forming a stack of signatures. 4,541,763, Cl. 414-45.000.

Chang, Clarence D.; Penick, Joe E.; and Socha, Richard F., to Mobil Oil Corporation. Conversion of LPG hydrocarbons to distillate fuels or lubes using integration of LPG dehydrogenation and MOGDL. 4,542,247, Cl. 585-254.000.

Chang, Tiang-Shing; Zientek, Lucy J.; and Viningauz, Arthur, to Block Drug Co., Inc. Denture fixative composition with partially neutralized and crosslinked polyacrylic acid. 4,542,168, Cl. 523-118.000.

Chang, Yan P. Limitless heat source power plants. 4,541,246, Cl. 60-648.000.

Chanley, Charles S.: *See—*
Sarma, Kalluri R.; and Chanley, Charles S., 4,542,004, Cl. 423-342.000.

Chase, David O.: *See—*
Beattie, Patrick J.; and Chase, David O., 4,541,545, Cl. 220-431.000.

Chatterjee, Shyam S.: *See—*
Klessing, Klaus; and Chatterjee, Shyam S., 4,542,137, Cl. 514-265.000.

Chemische Werke Huels, A.G.: *See—*
Dorffel, Jorg; Lange, Erhard; Otte, Werner; and Heinrich, Friedrich, 4,542,194, Cl. 525-521.000.

Chemische Werke Huls Aktiengesellschaft: *See—*
Sommer, August; Brucker, Rainer; Heitmann, Wilhelm; and Wozny, Norbert, 4,541,897, Cl. 203-19.000.

Chesebrough-Pond's, Inc.: *See—*
Engle, Elbert, 4,541,353, Cl. 112-304.000.

Chetty, P. R. K.; Dhyanchand, John; and Thollot, Pierre, to Sundstrand Corporation. Switch current sensing with snubber current suppression in a push-pull converter. 4,542,440, Cl. 361-111.000.

Chevalet, Jean; and Reeves, Robert, to Centre National de la Recherche Scientifique. Interface for managing information exchanges on a communications bus. 4,542,501, Cl. 370-85.000.

Chevron Research Company: *See—*
Brown, Robert J. S., 4,542,343, Cl. 324-307.000.
Jessel, Alfred J., 4,541,383, Cl. 123-435.000.
Miller, Stephen J., 4,542,251, Cl. 585-533.000.

Chicago Bridge & Iron Company: *See—*
Andrepont, John S.; and Korzonas, Raymond, 4,541,248, Cl. 62-54.000.

Chikaraishi, Takayo: *See—*
Nishimiya, Ryuji; Tuchiya, Yoshimasa; and Chikaraishi, Takayo, 4,541,201, Cl. 49-221.000.

Chikugo, Kazuo; Murakami, Taku; and Inada, Yorihiko, to Kabushiki Kaisha Komatsu Seisakusho. Connecting rod made of fiber reinforced plastic material. 4,541,304, Cl. 74-579.00E.

Childers, Kelly R. Anti-jam system for a packaging machine. 4,541,223, Cl. 53-411.000.

Chou, Jin-Jong. Game shoe. 4,541,185, Cl. 36-114.000.

Chow, Kwong-Wai: *See—*
Lee, James S. W.; Chow, Kwong-Wai; Lau, Alfred T. Y.; and Chow, Ming-Ngar, 4,541,815, Cl. 446-464.000.

Chow, Ming-Ngar: *See—*
Lee, James S. W.; Chow, Kwong-Wai; Lau, Alfred T. Y.; and Chow, Ming-Ngar, 4,541,815, Cl. 446-464.000.

Christian, Anthony: *See—*
Venning, Scott; and Christian, Anthony, 4,541,506, Cl. 181-254.000.

Christiansen, David W.; and Brown, William F., to United States of America, Energy. Automated closure system for nuclear reactor fuel assemblies. 4,542,267, Cl. 219-9.500.

Christiansen, Ole, to Kosan Teknova A/S. Valve device for the prevention of the overfilling of gas cylinders and similar portable containers. 4,541,464, Cl. 141-198.000.

Chu, Daniel T., to Abbott Laboratories. Methylenedioxy quino-benoxazine derivatives and antibacterial use. 4,542,133, Cl. 514-232.000.

Chubachi, Noriyoshi; and Kushibiki, Junichi. Ultrasonic microscope system. 4,541,281, Cl. 73-606.000.

Chugai Seiyaku Kabushiki Kaisha: *See—*
Hosokawa, Tomoyoshi; Matsuura, Ikutoshi; Takahashi, Hidenori; Ando, Kunio; and Tamura, Gakuzo, 4,542,143, Cl. 514-356.000.

Chung, James Y. J.: *See—*
Kriek, George R.; Chung, James Y. J.; Reinert, Gerard E.; and Neuray, Dieter, 4,542,177, Cl. 524-98.000.

Chuo Hatsujo Kabushiki Kaisha: *See—*
Kuzunishi, Hiroyuki, 4,541,303, Cl. 74-501.00R.

Churchill, John E.; and Stockdale, Trevor J., to U.S. Philips Corporation. Automatic sampling arrangement. 4,541,291, Cl. 73-864.250.

Ciba-Ceigy Corporation: *See—*
Jaffe, Edward E., 4,541,872, Cl. 106-309.000.
Meyer, Hans R., 4,542,222, Cl. 548-327.000.

Ciba-Geigy Corporation: *See—*
Gunther, Walter; and Hintermayr, Kurt, 4,541,831, Cl. 8-648.000.
Pfluger, Rudolf W., 4,542,216, Cl. 544-320.000.

Cielo, Paolo G.; and Bussiere, Jean, to Canadian Patents & Development Ltd. Efficient laser generation of surface acoustic waves. 4,541,280, Cl. 73-603.000.

Cine-Tech, Inc.: *See—*
Lerner, Richard, 4,541,698, Cl. 354-82.000.

Cirimele, Alfred P. Variable collage. 4,542,051, Cl. 428-39.000.

Citterio, Attilio: *See—*
Piccolo, Oreste; Belli, Aldo; Villa, Giovanni; Zen, Enrico; and Citterio, Attilio, 4,542,233, Cl. 560-21.000.

City of Hope National Medical Center: *See—*
Sailor, Clifford L., 4,541,537, Cl. 215-274.000.

Civilla, Enzo; Furlan, Piero; and Maccone, Sergio, to Montedison S.p.A. Stable compositions of N-(3,4-dichlorophenyl)-N'-methoxy-N'-methylurea (linuron) and 2,6-dinitro-N,N-dipropyl-4-trifluoromethylaniline (trifluralin) in emulsion. 4,541,860, Cl. 71-120.000.

Clark, Charles J.; and Bennett, Edward M., to Rockwood Systems Corporation. Method for crowd and riot control. 4,541,947, Cl. 252-307.000.

Clark Equipment Company: *See—*
Den Bleyker, Joseph R., 4,541,493, Cl. 172-824.000.

Clark, Garry E. Internal combustion driven pumping system and variable torque transmission. 4,541,243, Cl. 60-595.000.

Clark, James M.: *See—*
Secrist, Duane R.; Clark, James M.; and Landon, Thomas E., 4,541,912, Cl. 204-290.00R.

Clark, Joseph M.: *See—*
Liedtke, Ronald R.; Clark, Joseph M.; and Sage, Russell L., 4,541,334, Cl. 101-93.180.

Clark, Robin D., to Syntex (U.S.A.) Inc. Laidlomycin phenylcarbamate. 4,542,027, Cl. 514-459.000.

Claussen, Uwe: *See—*
Sirinyan, Kirkor; Merten, Rudolf; Wolf, Gerhard D.; Giesecke, Henning; Claussen, Uwe; and Ebneth, Harold, 4,542,074, Cl. 428-450.000.

Clay, William, to Land Pyrometers Limited. Sampling device. 4,541,292, Cl. 73-864.550.

Clayton Manufacturing Company: *See—*
Jennings, William S.; and Fegraus, Clark E., 4,541,365, Cl. 122-451.00R.

Clemens, Gerald C., to Twin City Monorail. Stacker crane fork mounting system. 4,541,769, Cl. 414-633.000.

Clemmings, John F.: *See—*
Huang, Victor T.; Colson, Cynthia A.; Yong, Sam; and Clemmings, John F., 4,542,035, Cl. 426-565.000.

Clerc, Jean F., to Commissariat a l'Energie Atomique. Matrix display control process. 4,541,690, Cl. 350-333.000.

Cline, Jack B. Motorcycle ride-off stand. 4,541,650, Cl. 280-299.000.

Clishem, James A.; Dennis, Charles L.; and Zemanek, Joseph, Jr., to Mobil Oil Corporation. Method and system for producing a PPI display. 4,542,488, Cl. 367-35.000.

Closson, Robert A. Sighting device for use on bows. 4,541,179, Cl. 33-265.000.

Coad, Edward F.; and Laird, Carol G., to General Foods Corporation. Apparatus for automatically packing articles in a bale bag. 4,541,227, Cl. 53-500.000.

Coal Industry (Patents) Limited: *See—*
Urquhart, Donald B.; and Moore, Stephen A., 4,541,913, Cl. 208-8.0LE.

Codignola, Franco: *See—*
Santacesaria, Elio; Codignola, Franco; Gelosa, Davino; and Carra', Sergio, 4,542,254, Cl. 585-828.000.

Coffey, Gerald P.: *See—*
Curatolo, Benedict S.; Sentman, Robert C.; and Coffey, Gerald P., 4,542,205, Cl. 528-336.000.

Coffey, Patrick J.: *See—*
Mattson, David R.; and Coffey, Patrick J., 4,542,295, Cl. 250-352.000.

Cogswell, Frederic N.; and Staniland, Philip A., to Imperial Chemical Industries, PlC. Method of producing fibre-reinforced composition. 4,541,884, Cl. 156-166.000.

Colder Products Company: *See—*
Blenkush, Brian J., 4,541,457, Cl. 137-614.060.

Cole, Harold E., to Goldberg, James R. Injection mold for a bottle closure device. 4,541,795, Cl. 425-437.000.

Collins, Guy R., to Dow Chemical Company, The. Process for preparing hydroxyethyl p-(β hydroxyethoxy)benzoate. 4,542,232, Cl. 560-064.000.

Collins, Robert P.; Haim, Elias S.; and Rowen, John A., to General Electric Company. Transflective liquid crystal display with enhanced contrast ratio. 4,541,692, Cl. 350-339.00R.

Collins, Walter W.; and Reinschreiber, Jonathan P., to Gerber Legendary Blades. Positive delivery knife sheath. 4,541,556, Cl. 224-196.000.

Colson, Cynthia A.: *See—*
Huang, Victor T.; Colson, Cynthia A.; Yong, Sam; and Clemmings, John F., 4,542,035, Cl. 426-565.000.

Columbia Gas System Service Corporation: *See—*
Jatana, Subhash C., 4,541,410, Cl. 126-362.000.

Combustion Engineering, Inc.: *See—*
Palmer, David N., 4,541,984, Cl. 376-415.000.
Palmer, David N., 4,542,009, Cl. 423-561.00R.
Thompson, Leslie L., 4,542,281, Cl. 219-216.000.

Comey, David M.; and Kusner, Ronald R., to Honeywell Inc. Apparatus and method for testing evacuatable dewar vessels. 4,541,730, Cl. 374-43.000.

Commissariat a l'Energie Atomique: *See—*
Batigne, Jean; Deslandes, Claude; Gillot, Jacques; and Tritten, Paul, 4,541,976, Cl. 264-69.000.
Clerc, Jean F., 4,541,690, Cl. 350-333.000.
Devillard, Jacques; and Granier, Jean, 4,541,985, Cl. 419-10.000.
Jeuch, Pierre, 4,541,892, Cl. 156-643.000.

Commonwealth of Australia, The: *See—*
Bolton, James O., 4,541,590, Cl. 244-3.200.

Compagnie d'Electronique et de Piezo-Electricite: *See—*
Tanaka, Shun-ichiro; Mizunoya, Nobuyuki; and Abe, Shigeo, 4,542,073, Cl. 428-446.000.

Compagnie Francaise de Raffinage: *See—*
Cannaux, Guy; and Calvet, Gerard, 4,541,413, Cl. 126-422.000.

Compagnie Industrielle de Mecanismes: *See—*
Periou, Pierre; and Dauvergne, Jean, 4,541,258, Cl. 70-263.000.

Conceptual Arts, Ltd.: *See—*
Fitzsimmons, Christine M., 4,542,055, Cl. 428-102.000.

Condea Chemie GmbH: *See—*
Meyer, Arnold; and Noweck, Klaus, 4,542,113, Cl. 502-8.000.

Conoco Inc.: *See—*
Benzing, William M.; Patterson, Waldo C.; and Cadle, Lawrence C., 4,542,487, Cl. 367-31.000.
Graf, Harlan G.; Janssen, Harry R.; Edwards, Don L.; and Duren, Don D., 4,541,453, Cl. 137-315.000.
Oda, Ronald L.; and Sweeney, William T., 4,541,850, Cl. 55-204.000.

Consolidated Controls Corporation: *See—*
Smith, Glen H., 4,541,609, Cl. 251-129.030.

Consortium Fur Elektrochemische Industrie GmbH: *See—*
Szejtli, Jozsef; Liptak, Andras; Nanasi, Pal; Fugedi, Peter; Jodal, Ildiko; Kandra, Lili; and Janossy, Lorant, 4,542,211, Cl. 536-103.000.

Constien, Vernon G.; and King, Milton T., to Dow Chemical Company, The. Hydraulic fracturing process and compositions. 4,541,935, Cl. 252-8.55R.

Contello, Michael. Animal restraint apparatus. 4,541,364, Cl. 119-109.000.

Contour Packaging, Inc.: *See—*
Nickloy, Charles H.; and Plunkett, Thomas H., 4,541,215, Cl. 52-479.000.

Cook, Lynn W., to Envirotech Corporation. Multiple rise cover. 4,541,210, Cl. 52-82.000.

Cooke, Edward I.; Pinnington, Arthur J.; and Smeatham, Charles A., to BICC plc. Process and apparatus for manufacturing optical cable elements. 4,541,979, Cl. 264-174.000.

Coop, Radar S.: *See—*
Elexpuru, Manuel A., 4,541,543, Cl. 220-316.000.

Cooper, Edward H., Jr.: *See—*
Darilek, Glenn T.; and Cooper, Edward H., Jr., 4,542,344, Cl. 324-326.000.

Cooper, Jeffrey L.; and Johnson, Brian C., to North American Philips Corporation. Method and apparatus for scrambling and descrambling television programs. 4,542,407, Cl. 358-120.000.

Cooperative Marketing Co., The: *See—*
Villanueva, Jesus R.; and Krautsack, Richard G., 4,541,598, Cl. 248-221.400.

Corbach, Rainer; Utsch, Berthold; Mohr, Adolf; and Zimmermann, Kurt, to Robert Bosch GmbH. Permanent-magnet commutator motor with auxiliary pole/bracket. 4,542,314, Cl. 310-154.000.

Corbisello, Rocco J. Tree stand. 4,541,601, Cl. 248-516.000.

Cordis Corporation: *See—*
Dorman, Frederick S.; and Peers-Trevarton, Charles A., 4,541,681, Cl. 339-100.000.
Parsonnet, Victor, 4,541,440, Cl. 128-785.000.

Corma, Avelino C.; Mifsud, Amparo C.; and Perez, Joaquin P., to Synthesis Engineering Ltd. Silicates with high ion exchange capacity derived from sepiolite and processes for their production. 4,542,002, Cl. 423-331.000.

Cornelissen, Anton E., to Shell Oil Company. Apparatus for countercurrent contact of fluids. 4,541,724, Cl. 366-290.000.

Cornell Research Foundation, Inc.: *See—*
Bowers, William S., 4,542,150, Cl. 514-456.000.

Corning Glass Works: *See—*
Scherer, George W., 4,541,855, Cl. 65-18.100.

Coronelli, Carolina: *See—*
Borghi, Angelo; Pallanza, Rosa; Coronelli, Carolina; and Cassani, Giovanni, 4,542,018, Cl. 424-119.000.

Correale, Mariano: *See—*
Maggioni, Paolo; Minisci, Francesco; and Correale, Mariano, 4,542,229, Cl. 549-462.000.

Corrosion Logging Service International: *See—*
Darilek, Glenn T.; and Cooper, Edward H., Jr., 4,542,344, Cl. 324-326.000.

Corvers, Antonius; and Mulders, Joannes M. C. A., to Stamicarbon B.V., Licensing Subsidiary of DSM. Preparation of derivatives of dichloroacetic acid esters. 4,542,220, Cl. 546-341.000.

Cosden Technology, Inc.: *See—*
Morris, Jeffrey D.; and Fuller, Robert A., 4,542,196, Cl. 526-64.000.

Costerton, J. W., to Rohm and Haas Company. Biomedical devices containing isothiazolones to control bacteria growth. 4,542,169, Cl. 523-121.000.

Cove, Harry R., to Hydril Company. Valve actuator having a rotary bi-directional apparatus with a dual ratchet mechanism. 4,541,295, Cl. 74-142.000.

Cowsar, Donald R.: *See—*
Tice, Thomas R.; Lewis, Danny H.; Cowsar, Donald R.; and Beck, Lee R., 4,542,025, Cl. 424-78.000.

CRC Manufacturing Co., Ltd.: *See—*
Miyamoto, Hiroshi, 4,541,714, Cl. 355-99.000.

Critchlow, Richard: *See—*
Tozier, John E.; Anouchi, Abraham; and Critchlow, Richard, 4,541,988, Cl. 422-94.000.

Croce, Charles L., to Marzeoti, Frank. Glass cutter and accessory. 4,541,176, Cl. 30-164.950.

Cronin, David V., to Polaroid Corporation. Photographic processing apparatus. 4,541,701, Cl. 354-324.000.

Crooks, Horatio N.; and Kelly, Martin J., Jr., to RCA Corporation. Detection of defects in a circular or spiral diffraction grating. 4,541,716, Cl. 356-237.000.

Cross Company, The: *See—*
Hubbard, Kenneth G., 4,542,272, Cl. 219-10.570.

Crothers, Donald M.: *See—*
Dattagupta, Nanibhushan; and Crothers, Donald M., 4,542,102, Cl. 435-6.000.

Crowe, Byron A. Rope reel display and dispenser assembly for perforated panel boards. 4,541,586, Cl. 242-129.500.

Crown Forest Industries Limited: *See—*
Arena, Joseph W.; Gilson, Karle B.; Malcolm, David T.; and Mellander, John A. R., 4,541,880, Cl. 156-94.000.

Cruickshank, James M.: *See—*
Pace, Paul W.; Mathieu, Pierre R.; and Cruickshank, James M., 4,542,529, Cl. 372-86.000.

$CRYO_2$ Corporation: *See—*
Perkins, Warren E., 4,541,276, Cl. 73-296.000.

cselt centro studi e Laboratori Telecomunicazioni SPA: *See—*
Bella, Luigi; Brignolo, Roberto; Barberis, Giulio; and Sposini, Maurizio, 4,542,499, Cl. 370-85.000.

Culleiton, Charles J.; LaCamera, Alfred F.; and Robare, Thomas J., to Aluminum Company of America. Process for decomposing chlorinated hydrocarbon compounds. 4,541,907, Cl. 204-67.000.

Culliford, Michael D., to N. D. Engineering Limited. Rotary high temperature reactor. 4,541,346, Cl. 110-246.000.

Cuomo, Jerome J.; and Kaufman, Harold R., to International Business Machines Corporation. Hall ion generator for working surfaces with a low energy high intensity ion beam. 4,541,890, Cl. 156-345.000.

Curatolo, Benedict S.; Sentman, Robert C.; and Coffey, Gerald P., to Standard Oil Company, The. Process for the manufacture of polyamides utilizing a mixture of an oxygenated phosphorus compound and a molybdenum compound as catalyst. 4,542,205, Cl. 528-336.000.
Cusey, Dar L.; and Kinard, John M., to National Industries, Inc. Replaceable motor operated antenna. 4,542,383, Cl. 343-903.000.
Custom Automation, Inc.: *See—*
Palazzolo, Francis V.; and Polachowski, Wayne T., 4,541,518, Cl. 193-35.00A.
Custom Oilfield Products, Inc.: *See—*
Forester, Buford G.; and Redmon, Billy L., 4,541,608, Cl. 251-77.000.
Cyclonic Equipment Co., Inc.: *See—*
Belviso, Vincent; and Wicks, William H., 4,541,519, Cl. 194-1.00N.
Daberkow, Donald L. Pipe loader. 4,541,767, Cl. 414-523.000.
Dacomed Corporation: *See—*
Timm, Gerald W.; Helms, Richard A.; and Sandford, Donald L., 4,541,420, Cl. 128-79.000.
Dahl, Karl. Device for handling packs of elongated articles, especially lumber packs. 4,541,766, Cl. 414-277.000.
Daiichi-Geyer Kabushiki Kaisha: *See—*
Kubota, Kazuho; and Todoroki, Masao, 4,541,605, Cl. 249-142.000.
Daikin Kogyo Co., Ltd.: *See—*
Ishikawa, Nobuo, 4,542,238, Cl. 562-586.000.
Takahara, Takao; and Hisanaga, Yorisato, 4,542,209, Cl. 536-23.000.
Daimler-Benz Aktiengesellschaft: *See—*
Foeldesi, Mihaly, 4,541,645, Cl. 180-68.400.
Gallitzendorfer, Josef; Gotz, Hans; Pfeiffer, Peter; and Tomforde, Johann, 4,541,664, Cl. 296-213.000.
Ruhl, Thomas, 4,541,369, Cl. 123-41.490.
Daiwa Steel Tube Industries Co., Ltd.: *See—*
Nakamura, Matsuichi, 4,541,659, Cl. 285-382.200.
Dale, Jacques: *See—*
Caugant, Jean; and Dale, Jacques, 4,541,293, Cl. 74-89.180.
Dalemark Industries, Inc.: *See—*
Delligatii, Patrick; and Steen, Hans F., 4,542,386, Cl. 346-140.00R.
D'Alessio, Michael S.; and Mocny, Richard C., to Harsco Corporation. Shoring frame. 4,541,509, Cl. 182-179.000.
Dallolio, Giorgio, to Redaelli Tecna Meccanica S.p.A. Device for sensing the tension in the individual threads in a stranding machine. 4,541,236, Cl. 57-264.000.
Daly, Christopher N.: *See—*
Ibrahim, Ibrahim H.; and Daly, Christopher N., 4,541,431, Cl. 128-419.0PT.
Dana Corporation: *See—*
Simons, Samuel, 4,542,280, Cl. 219-137.0WM.
Dana-Farber Cancer Institute, Inc.: *See—*
Blattler, Walter A.; Lambert, John M.; and Senter, Peter D., 4,542,225, Cl. 548-473.000.
Daniel, Jean-Claude: *See—*
Schuppiser, Jean-Luc; and Daniel, Jean-Claude, 4,542,181, Cl. 524-560.000.
Schuppiser, Jean-Luc; and Daniel, Jean-Claude, 4,542,182, Cl. 524-563.000.
Danielsen, Brant R.: *See—*
Munsch, John M.; Danielsen, Brant R.; and Miller, Jimmy L., 4,541,829, Cl. 604-80.000.
Dansk Industri Syndikat A/S: *See—*
Larsen, Laurits A. B., 4,541,476, Cl. 164-182.000.
Darbut, Alexander L.: *See—*
Tanonis, David R.; and Darbut, Alexander L., 4,542,271, Cl. 219-10.55E.
Darilek, Glenn T.; and Cooper, Edward H., Jr., to Corrosion Logging Service International; and Texas Gas Development Corporation. Detecting buried pipeline depth and location with electromagnetic triangulation. 4,542,344, Cl. 324-326.000.
Das, Jagabandhu, to E. R. Squibb & Sons, Inc. Tetrahydrothienyl substituted ethers. 4,542,151, Cl. 514-438.000.
Das, Jagabandhu, to E. R. Squibb & Sons, Inc. Tetrahydrofuranyl substituted prostaglandin analogs. 4,542,155, Cl. 514-461.000.
Das, Jagabandhu; and Haslanger, Martin F., to E. R. Squibb & Sons, Inc. 7-Oxabicycloheptane substituted prostaglandin alcohols and their use in the treatment of thrombolytic disease. 4,542,156, Cl. 514-469.000.
DaSambiagio, Alberto O. Portable grill. 4,541,406, Cl. 126-9.00R.
Dattagupta, Nanibhushan; and Crothers, Donald M., to Molecular Diagnostics, Inc. Coupling of nucleic acids to solid support by photochemical methods. 4,542,102, Cl. 435-6.000.
Dauvergne, Jean: *See—*
Periou, Pierre; and Dauvergne, Jean, 4,541,258, Cl. 70-263.000.
Davanture, Robert. Adjustable self-support stand. 4,541,597, Cl. 248-167.000.
Davidson, Robert I., to Ethyl Corporation. Nitrile purification. 4,541,961, Cl. 260-465.00G.
Davis, Eugene E.; and Searle, Richard J., to Johnsen & Jorgensen (Plastics) Ltd. Tamper-resistant container assembly. 4,541,536, Cl. 215-252.000.
Davis, Fred E., III; and Gershoni, Johathan M., to Yale University. Method for electroblotting macromolecules from a chromatographic gel. 4,541,910, Cl. 204-182.800.
Davis, Gene: *See—*
Shiff, Max J.; and Davis, Gene, 4,542,446, Cl. 362-122.000.
Davis, Gerald E.: *See—*
Fiala, Peter E.; Davis, Gerald E.; Tuma, Alan J.; and Hart, Jack E., 4,541,595, Cl. 244-129.300.
Dayco Corporation: *See—*
Lewis, Charles M., 4,541,883, Cl. 156-159.000.
Marsh, Richard L.; and Wetzel, Robert E., 4,541,823, Cl. 474-205.000.
Stiles, Carl A., 4,541,822, Cl. 474-201.000.
Dean, Barry D., to Atlantic Richfield Company. Polyarylate resin containing composition and method. 4,542,187, Cl. 525-132.000.
Dean, Jessie L. Thermal burning rod. 4,541,616, Cl. 266-48.000.
DeBlois, Charles. Bow-mounted quiver of the magazine type. 4,541,403, Cl. 124-51.00R.
Decker, Richard G.: *See—*
Leininger, Robert W.; and Decker, Richard G., 4,541,416, Cl. 126-450.000.
Decor Noel Corporation: *See—*
Shiff, Max J.; and Davis, Gene, 4,542,446, Cl. 362-122.000.
Deere & Company: *See—*
Hadley, Howard C.; and Bigbee, Marvin L., 4,541,549, Cl. 222-143.000.
Wittren, Richard A.; and Miller, James A., 4,541,451, Cl. 137-118.000.
DeFazio, John J.: *See—*
Buchanan, Gregory S.; and DeFazio, John J., 4,542,509, Cl. 371-61.000.
DeFelice, Diane L.: *See—*
Capuano, Italo A.; and DeFelice, Diane L., 4,542,008, Cl. 423-477.000.
Degussa Akteinsellschaft: *See—*
Engel, Jurgen; Kleemann, Axel; Posselt, Klaus; Stroman, Fritz; and Thiemer, Klaus, 4,542,159, Cl. 514-653.000.
Degussa Aktiengesellschaft: *See—*
Schalke, Peter; Manfred, Langer; and Huthmacher, Klaus, 4,542,240, Cl. 564-232.000.
Schwab, Heinrich; and Kaschke, Werner, 4,541,986, Cl. 422-5.000.
Strack, Hans; Kleinschmit, Peter; and Parr, Ehrfried, 4,542,115, Cl. 502-64.000.
Dehls, Allan W., to Profile Management Services, Inc. Squirrel-proof selective bird feeder. 4,541,362, Cl. 119-51.00R.
Deimerly, Thomas R.; and Van Heukelom, Rowland M. Air powered reciprocator. 4,541,565, Cl. 239-178.000.
Delaney, Edward A. Fishing rod including integral rechargeable bite-indicating means. 4,541,195, Cl. 43-17.000.
Delbacq, Charles J.: *See—*
Susman, Sherman; Boehm, Leah; Volin, Kenneth J.; and Delbacq, Charles J., 4,542,108, Cl. 501-40.000.
Del Bon, Luigi. Self-closing tilting valve. 4,541,550, Cl. 222-402.220.
Delfino, Michelangelo, to Fairchild Camera and Instrument Corporation. Laser induced flow of glass bonded materials. 4,542,037, Cl. 427-53.100.
Delfosse, Thierry: *See—*
Naffrechoux, Etienne; and Delfosse, Thierry, 4,541,203, Cl. 49-485.000.
Dell, John D., to Minnesota Mining and Manufacturing Company. Film-forming composition containing an antimicrobial agent and methods. 4,542,012, Cl. 424-28.000.
Delligatii, Patrick; and Steen, Hans F., to Dalemark Industries, Inc. Ink jet printing system. 4,542,386, Cl. 346-140.00R.
DeLong, Sanford D., to Energy 76, Inc. Electromagnetic reciprocating pump and motor means. 4,541,787, Cl. 417-417.000.
Delpy, David T.: *See—*
Parker, Dawood; and Delpy, David T., 4,541,901, Cl. 204-1.00T.
Deluca, Domenico: *See—*
Giannini, Umberto; Longi, Paolo; Deluca, Domenico; and Pivotto, Bruno, 4,542,197, Cl. 526-125.000.
Mayr, Adolfo; Giannini, Umberto; Susa, Ermanno; Longi, Paolo; Giachetti, Ettore; and DeLuca, Domenico, 4,542,198, Cl. 526-125.000.
Delzant, Marcel, to Glaverbel. Modifying glass bead surfaces. 4,542,066, Cl. 428-406.000.
Demeure, Alain, to Thomson-CSF. Signal-processing multiprocessor system. 4,542,455, Cl. 364-200.000.
Demopoulos, George P.; and Distin, Philip A., to Royal Institution for the Advancement of Learning (McGill University), The. Process for the production of cobalt, nickel and copper powders from chelating extractants. 4,541,861, Cl. 75-0.50A.
Denar Corporation: *See—*
Rolfs, Donald, 4,541,807, Cl. 434-264.000.
Den Bleyker, Joseph R., to Clark Equipment Company. Bulldozer tilt mechanism. 4,541,493, Cl. 172-824.000.
de Niet, Edmond, to U.S. Philips Corporation. Apparatus for reading a record carrier. 4,542,425, Cl. 360-77.000.
Dennis, Charles L.: *See—*
Clishem, James A.; Dennis, Charles L.; and Zemanek, Joseph, Jr., 4,542,488, Cl. 367-35.000.
Denton, Dean A.: *See—*
Nozemack, Richard J.; Rudesill, John A.; Denton, Dean A.; and Feldwick, Raymond D., 4,542,118, Cl. 502-65.000.
Denton, James B. Sail rigging. 4,541,355, Cl. 114-39.000.
Denton Vacuum Inc: *See—*
Singh, Bawa; and Boyarsky, David, 4,542,321, Cl. 315-111.810.
Derderian, Edmond J., to Union Carbide Corporation. Fuel compositions. 4,541,836, Cl. 44-53.000.
Derichs, Josef: *See—*
Raasch, Hans; Wassenhoven, Heinz-Georg; and Derichs, Josef, 4,541,233, Cl. 57-263.000.
Wassenhoven, Heinz-Georg; and Derichs, Josef, 4,541,234, Cl. 57-263.000.

Deslandes, Claude: *See*—
Batigne, Jean; Deslandes, Claude; Gillot, Jacques; and Tritten, Paul, 4,541,976, Cl. 264-69.000.
Deux, Alain; and Merant, Jean C., to Braud. Lifting and steering device for a steering wheel of a vehicle. 4,541,652, Cl. 280-672.000.
Devery, Kieran: *See*—
Hickey, David J.; and Devery, Kieran, 4,541,359, Cl. 119-1.000.
Devillard, Jacques; and Granier, Jean, to Commissariat a l'Energie Atomique. Process for the preparation of a composite material and composite material obtained by this process. 4,541,985, Cl. 419-10.000.
DeVita, Philip S.: *See*—
Zimmerman, Bonnie L.; Gannaway, Thomas W.; Resinski, Lawrence J.; and DeVita, Philip S., 4,541,806, Cl. 434-258.000.
Dewar, Robert, to Perceptron, Inc. Optical checking apparatus and method of using same. 4,541,721, Cl. 356-375.000.
Deyak, Frank L.: *See*—
Fitzer, Robert C.; Deyak, Frank L.; and Fabbrini, Charles J., 4,542,078, Cl. 428-914.000.
de Zbikowski, Juan L. Functional attachment system for osteosynthesis. 4,541,422, Cl. 128-92.00A.
Dhyanchand, John: *See*—
Chetty, P. R. K.; Dhyanchand, John; and Thollot, Pierre, 4,542,440, Cl. 361-111.000.
Diamond Guard, Inc.: *See*—
Gould, Russell J., 4,541,127, Cl. 2-19.000.
Dick, Bernard M., to AT&T Technologies, Inc. Surface mount component. 4,542,439, Cl. 361-405.000.
Dickerson, Ray, to Kollmorgen Technologies Corp. Winding technique for multiple winding brushless motors. 4,541,575, Cl. 242-703.000.
Dickey, Thomas A., to Avco Corporation. Sub-idle speed control apparatus for an airplane turbine engine. 4,541,237, Cl. 60-39.281.
Dickson, Tim R.: *See*—
Schonhaar, Werner W.; Wallace, Keith; and Dickson, Tim R., 4,541,854, Cl. 65-15.000.
Dieckmann, J. Robert; Lauber, Michael L.; and Roodvoets, Mark R., to Firestone Tire & Rubber Company, The. Extrusion-fill method of producing an elastomeric spring. 4,541,978, Cl. 264-150.000.
Diener, Henry. Manual utility cart. 4,541,644, Cl. 280-43.100.
Diesel Kiki Co., Ltd.: *See*—
Oshizawa, Hidekazu; and Fujimori, Kyoichi, 4,541,380, Cl. 123-357.000.
Dijkstra, Albert J.: *See*—
Maes, Pieter J.; and Dijkstra, Albert J., 4,542,036, Cl. 426-601.000.
Di Marco, Joel E.: *See*—
DiMarco, Thomas J.; and Di Marco, Joel E., 4,541,152, Cl. 24-271.000.
DiMarco, Thomas J.; and Di Marco, Joel E. Quick hook-up and release buckling for weight lifter belts. 4,541,152, Cl. 24-271.000.
Di Pietro, Carlo R., to Westinghouse Canada Inc. Magnetic core spacer with means to prevent adverse vibrations thereof. 4,542,313, Cl. 310-65.000.
Dirks, Johann H., to JHD Holding, Ltd. Writing instrument with random number selector. 4,541,630, Cl. 273-144.00B.
Distin, Philip A.: *See*—
Demopoulos, George P.; and Distin, Philip A., 4,541,861, Cl. 75-0.50A.
Dittrich, Hans: *See*—
Ernst, Gunter; Baer, Edmund; Wurz, Dieter; Dittrich, Hans; and Roller, Wilhelm, 4,541,968, Cl. 261-109.000.
Dockery, Daryl. Sliding door operator and lock. 4,541,202, Cl. 49-362.000.
Dr. Ing. Rudolf Hell GmbH: *See*—
Schulz-Hennig, Jorg, 4,542,392, Cl. 346-160.000.
Dr. Willmar Schwabe GmbH & Co.: *See*—
Klessing, Klaus; and Chatterjee, Shyam S., 4,542,137, Cl. 514-265.000.
Doemen, Benno, to Papst Motoren GmbH & Co KG. Direct current motor without commutator. 4,542,323, Cl. 318-254.000.
Dohi, Hidemi: *See*—
Okumura, Ryuichi; Dohi, Hidemi; and Togawa, Shingo, 4,541,748, Cl. 400-470.000.
Doki, Mitsuru: *See*—
Kitajima, Hiroyuki; Ohmachi, Kazuhiko; Doki, Mitsuru; Kazama, Junichi; and Kanao, Hidekazu, 4,542,458, Cl. 364-200.000.
Doleschall, Gabor: *See*—
Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nyitrai , Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Visky nee Gombos, Zsuzsanna; and Barta nee Szalai, Gizella, 4,541,955, Cl. 260-330.900.
Doljack, Frank A.: *See*—
McTavish, Mary S.; Stodieck, Robert W.; and Doljack, Frank A., 4,542,365, Cl. 338-20.000.
Dols, Robert H. Tile cutting apparatus. 4,541,404, Cl. 125-14.000.
Domes, E. A.: *See*—
Eldridge, Joseph L.; and Domes, E. A., 4,542,461, Cl. 364-424.000.
Domke, Robert R.: *See*—
Armour, Charles R.; Domke, Robert R.; and Spero, Richard J., 4,541,804, Cl. 434-15.000.
Domtar Inc: *See*—
Fischer, David, 4,541,560, Cl. 229-27.000.
Donermeyer, Donald D.; Martins, Joseph G.; and Fabel, David A., to Monsanto Company. Process bonded reinforced plastic structures. 4,542,047, Cl. 427-374.400.
Dorffel, Jorg; Lange, Erhard; Otte, Werner; and Heinrich, Friedrich, to Chemische Werke Huels, A.G. Naphtha-soluble, hydrogenated alkyl aryl ketone/formaldehyde resins and process for their production. 4,542,194, Cl. 525-521.000.
Dorman, Frederick S.; and Peers-Trevarton, Charles A., to Cordis Corporation. Electrical connection of wire conductor(s) to a terminal pin in an electrode assembly of a pacing lead. 4,541,681, Cl. 339-100.000.
Dorn, Conrad P., to Merck & Co., Inc. Prodrug esters of diflunisal and related compounds. 4,542,158, Cl. 514-512.000.
Dougherty, Edward F.; and Scates, Mark O., to Celanese Corporation. Stabilized ethylenically unsaturated organic compositions. 4,542,231, Cl. 560-4.000.
Dow Chemical Company, The: *See*—
Collins, Guy R., 4,542,232, Cl. 560-064.000.
Constien, Vernon G.; and King, Milton T., 4,541,935, Cl. 252-8.55R.
Jones, Edward M., 4,542,221, Cl. 546-345.000.
Thomson, Timothy; and Glomski, Ronald L., 4,541,965, Cl. 260-505.00C.
van der Heijden, Lambertus P. P. M., 4,542,188, Cl. 525-240.000.
Dowzall, Martin E., to Esselte Pendaflex Corporation. Production of colored legends. 4,542,039, Cl. 427-149.000.
Dozono, Tetsuro: *See*—
Katsumata, Tsutomu; and Dozono, Tetsuro, 4,541,964, Cl. 260-465.300.
Drackett Company, The: *See*—
Jones, David A.; and Maust, Daniel A., 4,541,139, Cl. 15-171.000.
Draper, David L.; and McKee, Gerald D., to Cars & Concepts, Inc. Sunroof. 4,541,665, Cl. 296-218.000.
Dressell, Larry T. Window blind assembly. 4,541,469, Cl. 160-166.00R.
Dresser Industries, Inc.: *See*—
Kerzner, Mark G., 4,541,275, Cl. 73-152.000.
Drevet, Michel; and Trouillet, Jean, to Jeumont-Schneider Corporation. Safety device for motor pump group. 4,541,773, Cl. 415-111.000.
Drexler, Jerome, to Drexler Technology Corporation. Method for making a laser recordable wallet-size plastic card. 4,542,288, Cl. 235-487.000.
Drexler, Rudolph A., to Simmonds Precision Products, Inc. Apparatus for the mounting and wiring of printed circuit boards. 4,542,442, Cl. 361-413.000.
Drexler Technology Corporation: *See*—
Drexler, Jerome, 4,542,288, Cl. 235-487.000.
Drumco: *See*—
Drummond, Donald D.; Johnsey, Walter F.; and Wood, Roy W., 4,541,494, Cl. 175-228.000.
Drummond, Donald D.; Johnsey, Walter F.; and Wood, Roy W., to Drumco. Drill bit assembly. 4,541,494, Cl. 175-228.000.
Duke, Michael: *See*—
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Duncan Electric Company, Inc.: *See*—
Brandyberry, Robert E.; Forbes, Mark M.; Gloyeski, David D.; Greafnitz, Russell F.; Phillips, Glen R.; Straw, Robert L.; Stricker, Kevin L.; Szabela, William A.; Webeck, Richard R.; Mayfield, Glenn A.; and Vollmer, William L., 4,542,469, Cl. 364-483.000.
Duren, Don D.: *See*—
Graf, Harlan G.; Janssen, Harry R.; Edwards, Don L.; and Duren, Don D., 4,541,453, Cl. 137-315.000.
Duro Dyne Corporation: *See*—
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Duschl, Robert A., to RCA Corporation. Charge coupled device based system and method for inspecting and modifying images. 4,542,404, Cl. 358-106.000.
Duytschaever, Benedikt: *See*—
Van Gestel, Josef; Duytschaever, Benedikt; Muntwyler, Rene ; and Scharer, Max, 4,542,146, Cl. 514-383.000.
Dvorsky, Drahomir; and Cerovsky, Karel, to Vyzkumny ustav zuslechtovaci. Quaternary pyrimidinium compounds. 4,542,217, Cl. 544-335.000.
DX Antenna Company, Limited: *See*—
Nagatomi, Akihiko, 4,542,300, Cl. 307-112.000.
Dye, Richard G.; and Robichaud, Arthur W., to Purolator Products Inc. Process for forming a deep drawn and ironed pressure vessel having selectively controlled side-wall thicknesses. 4,541,265, Cl. 72-349.000.
Dynamit Nobel Aktiengesellschaft: *See*—
Breitscheidel, Hans-Ulrich; Anshen, Walter H.; and Kautz, Rudolf, 4,542,057, Cl. 428-126.000.
Theis, Christoph; and Fickert, Gudrun, 4,541,960, Cl. 260-464.000.
Dyroff, David R., to Monsanto Company. Process for preparing polymeric acetal carboxylate compositions. 4,542,206, Cl. 528-488.000.
E. R. Squibb & Sons, Inc.: *See*—
Das, Jagabandhu, 4,542,151, Cl. 514-438.000.
Das, Jagabandhu, 4,542,155, Cl. 514-461.000.
Das, Jagabandhu; and Haslanger, Martin F., 4,542,156, Cl. 514-469.000.
Hall, Steven E.; and Haslanger, Martin F., 4,542,157, Cl. 514-469.000.
Jackson, Ivan; Ward, Michael D.; and Ridgway, Frank, 4,542,020, Cl. 514-31.000.
Sprague, Peter W.; Loots, Melanie J.; and Haslanger, Martin F., 4,542,160, Cl. 514-569.000.
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Brust, David P., 4,542,087, Cl. 430-220.000.
Steklenski, David J.; and Littman, Jon E., 4,542,095, Cl. 430-527.000.

Watt, Peter B.; and Sharman, Richard A., 4,541,688, Cl. 350-171.000.

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Iversen, Alfred A.; and Eastman, William J., 4,541,421, Cl. 128-87.00B.

Eaton Corporation: *See*—
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Schutten, Herman P.; Benjamin, James A.; and Lade, Robert W., 4,542,396, Cl. 357-23.400.
Zukausky, Keith E., 4,541,562, Cl. 236-12.120.

Ebara, Yohji: *See*—
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Ebert, Lynn J.: *See*—
Woodard, Dudley H.; and Ebert, Lynn J., 4,541,875, Cl. 148-11.50C.

Ebi, Yutaka: *See*—
Jinnai, Koichiro; and Ebi, Yutaka, 4,542,385, Cl. 346-75.000.

Ebihara, Masaharu: *See*—
Fukuda, Katsumi; Ebihara, Masaharu; Hayakumo, Tadahiko; and Todoroki, Tsunehiko, 4,541,326, Cl. 98-40.250.

Ebihara, Sakae; Tanizaki, Hiroyuki; Sato, Kazuma; and Kanazawa, Yuzo, to Nissan Motor Company, Limited; Aichi Machine Industry Company, Limited; and Ikeda Bussan Company, Limited. Vehicle seat arrangement. 4,541,667, Cl. 297-64.000.

Ebneth, Harold: *See*—
Sirinyan, Kirkor; Merten, Rudolf; Wolf, Gerhard D.; Giesecke, Henning; Claussen, Uwe; and Ebneth, Harold, 4,542,074, Cl. 428-450.000.

Eck, Herbert; and Jira, Reinhard, to Wacker-Chemie GmbH. Process for aqueous polymer dispersion by polymerizing unsaturated ethylenic compounds. 4,542,184, Cl. 524-827.000.

Eckelman, William: *See*—
Nakatsuka, Iwao; Eckelman, William; and Rzeszotarski, Waclaw J., 4,541,957, Cl. 260-397.200.

Eckert, Konrad: *See*—
Eheim, Franz; Hofer, Gerald; Eckert, Konrad; and Links, Heinz, 4,541,385, Cl. 123-446.000.

Eddy, Victoria J.; and Hallgren, John E., to General Electric Company. Method for making siloxanenorbornane bisanhydride. 4,542,226, Cl. 549-214.000.

Edmond Pharma s.r.l.: *See*—
Vandoni, Guido, 4,542,141, Cl. 514-341.000.

Edwards, Don L.: *See*—
Graf, Harlan G.; Janssen, Harry R.; Edwards, Don L.; and Duren, Don D., 4,541,453, Cl. 137-315.000.

Edwards, Richard R.: *See*—
Anglin, Jeanne M.; Edwards, Richard R.; and Thomas, John E., 4,542,056, Cl. 428-116.000.

Edwards, Roger A.: *See*—
Sullivan, Sean; and Edwards, Roger A., 4,541,694, Cl. 350-371.000.

EFB, Inc.: *See*—
Alexander, Jeffery C.; and Zahedi, Karim, 4,542,000, Cl. 423-244.000.

Eheim, Franz; Hofer, Gerald; Eckert, Konrad; and Links, Heinz, to Robert Bosch GmbH. Fuel injection system for self-igniting internal combustion engines. 4,541,385, Cl. 123-446.000.

Ehrfeld, Wolfgang: *See*—
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Eiraku, Yukio: *See*—
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Eiringhaus, Eilhelm: *See*—
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Eisenhardt, William A., Jr.: *See*—
Schenz, Timothy W.; Eisenhardt, William A., Jr.; and Saleeb, Fouad Z., 4,541,873, Cl. 127-46.100.

Eiting, John C., to Precision Strip Technology, Inc. Hub starter fixture. 4,541,163, Cl. 29-426.500.

Ejima, Noriyoshi: *See*—
Yamamoto, Osamu; Suda, Hideaki; Nishiuchi, Kihachiro; Izumi, Misao; and Ejima, Noriyoshi, 4,542,067, Cl. 428-237.000.

EKA AB: *See*—
Bengt, Gustaf F., 4,541,997, Cl. 423-219.000.

Elbel, Karl; and Augustin, Rainer, to SEA Schleifmittel Entwicklung Anwendung GmbH. Process for producing grinding elements. 4,541,843, Cl. 51-298.000.

Elder, James D.: *See*—
Bergeron, Hervin J., Jr., 4,541,479, Cl. 165-45.000.

Eldridge, Joseph L.; and Domes, E. A., to Payhauler Corporation. Apparatus for acquiring dump truck duty cycle data. 4,542,461, Cl. 364-424.000.

Electronique Serge Dassault: *See*—
le Goff, Yves, 4,541,141, Cl. 15-302.000.

Elexpuru, Manuel A., to Coop, Radar S. Regulation and control device for pressure cookers. 4,541,543, Cl. 220-316.000.

Elhaus, Friedrich W. Preheating furnace for elongated material. 4,541,799, Cl. 432-177.000.

Elijah, Jerry D. Control system for combine header. 4,541,229, Cl. 56-10.200.

El Kadiri Cherkaoui El Moursli, Fouzia: *See*—
Armand, Michel B.; and El Kadiri Cherkaoui El Moursli, Fouzia, 4,542,081, Cl. 429-192.000.

Elkem a/s: *See*—
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Ellis, Darwin V., to Schlumberger Technology Corporation. Correction of natural gamma radiation logs for the effects of gamma ray emission from and attenuation by the borehole fluid. 4,542,292, Cl. 250-256.000.

Ellis, Paul E., Jr.: *See*—
Hsu, Chao-Yang; and Ellis, Paul E., Jr., 4,542,119, Cl. 502-153.000.
Hsu, Chao-Yang; and Ellis, Paul E., Jr., 4,542,120, Cl. 502-153.000.
Hsu, Chao-Yang; Lyons, James E.; and Ellis, Paul E., Jr., 4,542,242, Cl. 568-454.000.

Ellis, Wayne F.; Griffin, William R.; and Troutman, Ronald R., to International Business Machines Corporation. CMOS bootstrapped pull up circuit. 4,542,310, Cl. 307-578.000.

Ellis, William H.; and Wise, Leo C., Jr., to Broadband Engineering, Inc. CATV package designed for underground system use. 4,542,437, Cl. 361-386.000.

ElMasry, Nadia A.: *See*—
Stadelmaier, Hans H.; and ElMasry, Nadia A., 4,541,877, Cl. 148-101.000.

Elmqvist, Hakan; and Strandberg, Hans, to Siemens Aktiengesellschaft. Method and a heart pacemaker for terminating a tachycardia. 4,541,430, Cl. 128-419.0PG.

Elser, Wilhelm; Huebner, Klaus; Siol, Werner; Mager, Theodor; and Wicke, Michael, to Rohm GmbH. Thickeners and binders forming gels in gasoline. 4,542,171, Cl. 523-201.000.

Emco Wheaton (International) Limited: *See*—
Young, Colin G., 4,541,397, Cl. 123-527.000.

EMI Limited: *See*—
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Enami, Ken: *See*—
Kotake, Eiichi; Enami, Ken; and Wada, Kinzo, 4,542,423, Cl. 360-73.000.

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Tozawa, Takashi; Endo, Masahiro; and Eiraku, Yukio, 4,541,859, Cl. 71-88.000.

Endress, Donald A. Sock stretcher. 4,541,554, Cl. 223-66.000.

Endress U. Hauser GmbH U. Co.: *See*—
Luder, Ernst; and Kallfass, Traugott, 4,541,904, Cl. 204-38.300.

Energy 76, Inc.: *See*—
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Engel, Friedrich: *See*—
Stumpfi, Werner; Bettinger, Gunter; Engel, Friedrich; Fitterer, Horst; Kreimes, Norbert; Pfefferkorn, Dietmar; Schaffer, Norbert; and Schmidts, Kurt, 4,541,587, Cl. 242-197.000.

Engel, Jurgen; Kleemann, Axel; Posselt, Klaus; Stroman, Fritz; and Thiemer, Klaus, to Degussa Akteinsellschaft. Cycloaliphatic ketoamines. 4,542,159, Cl. 514-653.000.

Engineering Resources, Inc.: *See*—
Troy, Michael, 4,541,456, Cl. 137-549.000.

Engle, Elbert, to Chesebrough-Pond's, Inc. Dual-chain sewing machine. 4,541,353, Cl. 112-304.000.

English Electric Valve Company Limited: *See*—
Banks, Peter B., 4,541,699, Cl. 354-227.100.

Engnell, David: *See*—
Rottler, Donald B.; and Engnell, David, 4,541,620, Cl. 269-46.000.

Environmental Interiors, Inc.: *See*—
Head, Thomas F., 4,541,216, Cl. 52-484.000.

Envirotech Corporation: *See*—
Cook, Lynn W., 4,541,210, Cl. 52-82.000.

Erard, Henri. Adjustable television/video recorder stand incorporating a cassette-holder. 4,541,343, Cl. 108-92.000.

Ericson, A. Earle: *See*—
Berger, Harvey L.; Ericson, A. Earle; and Levine, Carl, 4,541,564, Cl. 239-102.000.

Erikson, Herman E., to Polaroid Corporation. Radiographic intensifying screen manipulator. 4,542,523, Cl. 378-167.000.

Eriksson, Jan Erik; Karlsson, Mats; Kollberg, Sten; and Mansson, Bengt, to ASEA Aktiebolag. System for stirring in continuous casting. 4,541,472, Cl. 164-504.000.

Erling, Earl: *See*—
Soumar, Karel; and Erling, Earl, 4,541,447, Cl. 137-15.000.

Ernst, Gunter; Baer, Edmund; Wurz, Dieter; Dittrich, Hans; and Roller, Wilhelm, to Ernst, Gunter. Cooling tower. 4,541,968, Cl. 261-109.000.

Ernst Leitz Wetzlar GmbH: *See*—
Bletz, Walter; Machmerth, Herbert; and Mandler, Walter, 4,541,700, Cl. 354-286.000.

ESPE Fabrik Pharmazeutischer Praparate GmbH: *See*—
Jochum, Peter; and Gasser, Oswald, 4,542,172, Cl. 523-116.000.

Essary, James W.; and Sanderson, Robert A., to Graham Magnetics Incorporated. Slitter, wind-up clutch assemblies. 4,541,579, Cl. 242-56.200.

Esselte Pendaflex Corporation: *See*—
Dowzall, Martin E., 4,542,039, Cl. 427-149.000.
Shadbolt, Philip; and Cassey, Graham E., 4,542,052, Cl. 428-40.000.

Etablissements Pierre Angenieux SA: *See*—
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Etablissements Lemoin & Cie: *See*—
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Ethyl Corporation: *See*—
Davidson, Robert I., 4,541,961, Cl. 260-465.00G.
Raley, Garland E.; and Spear, Dean M., 4,541,794, Cl. 425-290.000.
Stahly, G. Patrick, 4,541,962, Cl. 260-465.00F.
Zaweski, Edward F.; and Niebylski, Leonard M., 4,541,838, Cl. 44-57.000.

Eue, Ludwig: *See*—
Pfister, Theodor; Eue, Ludwig; Schmidt, Robert R.; and Hanssler, Gerd, 4,541,858, Cl. 71-86.000.

Euerle, Kurt: *See*—
Tischler, Bernd; and Euerle, Kurt, 4,541,762, Cl. 414-32.000.

Euroka Oy: *See*—
Laine, Unto, 4,542,524, Cl. 381-53.000.

Evans, John M.; Buckingham, Robin E.; and Willcocks, Kenneth, to Beecham Group p.l.c. 4-Amino-benzo[b]pyran-3-ol derivatives. 4,542,149, Cl. 514-422.000.

Evans, William P., to Union Carbide Corporation. Iodide treatment of manganese dioxide. 4,541,172, Cl. 29-623.100.

Everett, Lynn E., to Tusco Manufacturing Co. Display canopy. 4,541,675, Cl. 312-257.00R.

Exxon Research and Engineering Co.: *See*—
Baird, William C., Jr.; and Mauldin, Charles H., 4,541,915, Cl. 208-65.000.
Mitchell, Howard L., III; and Sawyer, Willard H., 4,542,121, Cl. 502-220.000.
Payne, Virgil L.; and Mauldin, Charles H., 4,542,122, Cl. 502-325.000.
Rosensweig, Ronald E., 4,541,924, Cl. 208-216.00R.
Seiver, Robert L., 4,541,920, Cl. 208-138.000.
Seiver, Robert L.; and Gernand, Martin O., 4,541,925, Cl. 208-216.00R.
Wernick, David L., 4,541,972, Cl. 264-41.000.
West, Theodore H., 4,541,917, Cl. 208-31.000.

Fabbrini, Charles J.: *See*—
Fitzer, Robert C.; Deyak, Frank L.; and Fabbrini, Charles J., 4,542,078, Cl. 428-914.000.

Fabel, David A.: *See*—
Donermeyer, Donald D.; Martins, Joseph G.; and Fabel, David A., 4,542,047, Cl. 427-374.400.

Faessle, Fritz; and Stadler, Siegmund, to Giulini Chemie GmbH. Process for the production of precision castings by the gypsum-mold process. 4,541,471, Cl. 164-6.000.

Fairchild Camera and Instrument Corporation: *See*—
Delfino, Michelangelo, 4,542,037, Cl. 427-53.100.

Falk, John C.; and Kliever, Leland B., to Borg-Warner Chemicals, Inc. Acrylic sequential graft copolymer-styrene-acrylonitrile copolymer blends. 4,542,179, Cl. 524-432.000.

Fanuc Ltd.: *See*—
Inaba, Hajimu; and Miyashita, Hideo, 4,542,471, Cl. 364-513.000.
Sakano, Tetsuro, 4,542,327, Cl. 318-571.000.

Fauve, Robert M., to Institut Pasteur. Phosphorylated 3-glyceryl-esters of glucose. 4,542,212, Cl. 536-117.000.

Fedorinov, Vladimir A.: *See*—
Potapkin, Viktor F.; Morozov, Igor A.; Fedorinov, Vladimir A.; and Ravich, Alexandr S., 4,541,263, Cl. 72-243.000.

Fegraus, Clark E.: *See*—
Jennings, William S.; and Fegraus, Clark E., 4,541,365, Cl. 122-451.00R.

Fehr, Hans: *See*—
Maak, Norbert; Friedemann, Wolfgang; Fehr, Hans; and Feulner, Kurt, 4,541,869, Cl. 106-38.350.

Feldwick, Raymond D.: *See*—
Nozemack, Richard J.; Rudesill, John A.; Denton, Dean A.; and Feldwick, Raymond D., 4,542,118, Cl. 502-65.000.

Fell, Wolfgang; Zahn, Heinrich; Gunschmann, Peter; and Buchel, Winfried, to Robert Bosch GmbH. Magnetic tape guide roller system. 4,541,557, Cl. 226-191.000.

Fenn, John B.; Yamashita, Masamichi; and Whitehouse, Craig, to Yale University. Process and apparatus for changing the energy of charged particles contained in a gaseous medium. 4,542,293, Cl. 250-288.000.

Fenzel, David T., to Allied Corporation. Clutch drive with antirotation spring. 4,541,516, Cl. 192-85.0CA.

Ferguson, Robert W., to Oyster Tent Company. Tent. 4,541,445, Cl. 135-106.000.

Fernandez, John E.: *See*—
Kwiatkowski, Keith A.; Fernandez, John E.; and LaRocca, William J., 4,541,300, Cl. 74-476.000.

Fetter, Jozsef: *See*—
Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nyitrai , Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Visky nee Gombos, Zsuzsanna; and Barta nee Szalai, Gizella, 4,541,955, Cl. 260-330.900.

Feulner, Kurt: *See*—
Maak, Norbert; Friedemann, Wolfgang; Fehr, Hans; and Feulner, Kurt, 4,541,869, Cl. 106-38.350.

Fiala, Peter E.; Davis, Gerald E.; Tuma, Alan J.; and Hart, Jack E., to Heath-Tecna Precision Structures. Removable interior window unit for aircraft. 4,541,595, Cl. 244-129.300.

Fiberglas Canada, Inc.: *See*—
Schonhaar, Werner W.; Wallace, Keith; and Dickson, Tim R., 4,541,854, Cl. 65-15.000.

Fickelscher, Kurt G., to Balcke-Duerr AG. Shaft-coupling. 4,541,816, Cl. 464-81.000.

Fickert, Gudrun: *See*—
Theis, Christoph; and Fickert, Gudrun, 4,541,960, Cl. 260-464.000.

Fiedler, Karl E.; and Fuchs, Helmut, to Karl Lumberg GmbH & Co. Electrical connector strip. 4,541,679, Cl. 339-97.00P.

Figgie International: *See*—
McGill, Robert W.; and Winiasz, Michael E., 4,541,524, Cl. 198-470.100.

Filippini, Andrea; and Carobbi, Renato, to Sirac SPA. Stable boron resins of high selective absorbent power. 4,542,161, Cl. 521-53.000.

Fillmann, Werner, to Battenfeld Maschinenfabrik GmbH. Molded composite polymeric body with anti-static properties and process for making same. 4,542,054, Cl. 428-68.000.

Finan, Michael, to Ballintubber Enterprises Limited. Peat extrusion apparatus. 4,541,834, Cl. 44-30.000.

Fink, Herbert; Huebner, Klaus; Markert, Gerhard; and Suetterlin, Norbert, to Rohm GmbH. Method for thickening aqueous systems. 4,542,175, Cl. 524-516.000.

Finkl, Charles W.; Lehman, Albert L.; and Philbrick, Herbert S., Jr., to A. Finkl & Sons Co. Ladle steelmaking method and apparatus. 4,541,862, Cl. 75-12.000.

Finney, James L.: *See*—
Spigarelli, Donald J.; Peck, Douglas J.; Hall, Walter J.; and Finney, James L., 4,541,358, Cl. 118-58.000.

Fireman, Kenneth A.: *See*—
Boyd, Francis M.; and Fireman, Kenneth A., 4,541,175, Cl. 30-161.000.

Firestone Tire & Rubber Company, The: *See*—
Dieckmann, J. Robert; Lauber, Michael L.; and Roodvoets, Mark R., 4,541,978, Cl. 264-150.000.
Kay, Edward L.; and Gutierrez, Richard, 4,542,191, Cl. 525-383.000.

Fischer, David, to Domtar Inc. Partitioned box. 4,541,560, Cl. 229-27.000.

Fischer, Heinz J.: *See*—
Bechthold, Horst; Fischer, Heinz J.; and Schulte, Wolfgang, 4,541,999, Cl. 423-235.000.

Fischer, Jochen, to Kochs Adler AG. Automatic sewing machine for producing a seam having a fastening seam and a tacking seam. 4,541,348, Cl. 112-121.120.

Fischer, Manfred: *See*—
Buran, Ulrich; Fischer, Manfred; and Neuehauser, Hans J., 4,542,111, Cl. 501-127.000.

Fischer, Werner: *See*—
Flaig, Ulrich; Fischer, Werner; Locher, Johannes; and Schmidt, Wolfgang, 4,541,271, Cl. 73-117.300.

Fisher, Edmund A.: *See*—
Burke, James S.; Miller, David L.; and Fisher, Edmund A., 4,541,449, Cl. 137-72.000.

Fitterer, Horst: *See*—
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Fitzer, Robert C.; Deyak, Frank L.; and Fabbrini, Charles J., to Minnesota Mining and Manufacturing Company. Transfer sheet bearing a thermally transferable ink composition and article made therefrom. 4,542,078, Cl. 428-914.000.

Fitzsimmons, Christine M., to Conceptual Arts, Ltd. Three-dimensional fabric painting surfaces. 4,542,055, Cl. 428-102.000.

Fladerer, Heinrich; and Magerl, Johann, to Siemens Aktiengesellschaft. Arrangement for the synchronous demultiplexing of a time division multiplex signal. 4,542,503, Cl. 370-100.000.

Flaig, Ulrich; Fischer, Werner; Locher, Johannes; and Schmidt, Wolfgang, to Robert Bosch GmbH. Measuring arrangement for continuous monitoring operating parameters of an internal combustion engine. 4,541,271, Cl. 73-117.300.

Flexible Laser Systems Limited: *See*—
Taylor, Arthur F. D. S., 4,542,278, Cl. 219-121.0LV.

Flexwatt Corporation: *See*—
Grise, Frederick G. J., 4,542,285, Cl. 219-543.000.

Flippin, George F. Revolver cylinder and extractor assembly. 4,541,193, Cl. 42-68.000.

Flo-Pac Corporation: *See*—
Antonson, Douglas M., 4,541,207, Cl. 51-376.000.

Flodman, Bertil: *See*—
Flodman, Rune; Flodman, Lennart; and Flodman, Bertil, 4,541,192, Cl. 42-40.000.

Flodman Guns KB: *See*—
Flodman, Rune; Flodman, Lennart; and Flodman, Bertil, 4,541,192, Cl. 42-40.000.

Flodman, Lennart: *See*—
Flodman, Rune; Flodman, Lennart; and Flodman, Bertil, 4,541,192, Cl. 42-40.000.

Flodman, Rune; Flodman, Lennart; and Flodman, Bertil, to Flodman Guns KB. Hinge device for firearms. 4,541,192, Cl. 42-40.000.

Florentino, Gregory. Paint tray cover. 4,541,542, Cl. 220-306.000.

Flowers, Stephen A.: *See*—
Berg, Lloyd T.; and Flowers, Stephen A., 4,541,526, Cl. 206-44.120.

Fluckiger, Hans-Ulrich: *See*—
Willi, Ernst; and Fluckiger, Hans-Ulrich, 4,541,495, Cl. 177-210.0FP.

FMC Corporation: *See*—
Heidler, Lester D.; Styer, Richard D.; and Hunsberger, Enos R., 4,541,930, Cl. 210-344.000.
Nochumson, Samuel, 4,542,200, Cl. 526-238.200.
Walker, William B.; Justus, Paul D.; and Bloomfield, Michael K., 4,541,768, Cl. 414-535.000.

Foeldesi, Mihaly, to Daimler-Benz Aktiengesellschaft. Vehicle radiator mounting. 4,541,645, Cl. 180-68.400.

Foley, William H., to General Dynamics Corporation. Takeoff and landing platform for V/STOL airplane. 4,541,594, Cl. 244-114.00B.

Foller, Peter C., to Oxytech, Inc. Process and device for the generation of ozone via the anodic oxidation of water. 4,541,989, Cl. 422-186.070.

Forbes, Mark M.: *See—*
Brandyberry, Robert E.; Forbes, Mark M.; Gloyeski, David D.; Greafnitz, Russell F.; Phillips, Glen R.; Straw, Robert L.; Stricker, Kevin L.; Szabela, William A.; Webeck, Richard R.; Mayfield, Glenn A.; and Vollmer, William L., 4,542,469, Cl. 364-483.000.

Ford Motor Company: *See—*
McLean, Arthur F., 4,541,786, Cl. 417-407.000.
Muller, George H., 4,541,511, Cl. 187-9.00R.
Oyafuso, Harry H., 4,541,296, Cl. 74-425.000.
Person, Dennis W.; Pierce, Stanley L.; and Liang, Polung, 4,541,308, Cl. 74-868.000.
Schechter, Michael M.; and Simko, Aladar O., 4,541,394, Cl. 123-506.000.
Strutt, Derek W., 4,541,298, Cl. 74-493.000.
Tannenlaufer, Gerd; Frank, Julius; and Forsting, Bernhard, 4,541,611, Cl. 251-228.000.
Weiss, Edwin, 4,541,372, Cl. 123-90.170.

Forester, Buford G.; and Redmon, Billy L., to Custom Oilfield Products, Inc. High pressure shut-off valve. 4,541,608, Cl. 251-77.000.

Forman, Edward W.; and Kozlowski, Mark F., to Mobil Oil Corporation. Continuous layon roller film winder. 4,541,583, Cl. 242-56.00A.

Forsting, Bernhard: *See—*
Tannenlaufer, Gerd; Frank, Julius; and Forsting, Bernhard, 4,541,611, Cl. 251-228.000.

Fort, Pierre; and Pierrel, Michel, to Pont-a-Mousson S.A. Socket core handling and positioning device for a centrifugal pipe casting machine. 4,541,477, Cl. 164-302.000.

Fortune, David J.: *See—*
Beasant, Andrew J.; Orwin, Olaf J. B.; and Fortune, David J., 4,541,512, Cl. 192-56.00R.

Foster, Mark A.: *See—*
Black, Joseph; Foster, Mark A.; and Luard, Nicholas G., 4,541,134, Cl. 5-118.000.

Fowler, Steven E.; Hennings, George N.; and McVay, James V., to United States of America, Navy. Self-checking arming and firing controller. 4,541,341, Cl. 102-215.000.

Framo Developments (UK) Limited: *See—*
Mohn, Frank, 4,541,782, Cl. 417-244.000.

Francis, Robert W.; Napoli, Joseph D.; and Tsien, Hsue C., to Solarex Corporation. Bus bar interconnect for a solar cell. 4,542,258, Cl. 136-256.000.

Frank, Julius: *See—*
Tannenlaufer, Gerd; Frank, Julius; and Forsting, Bernhard, 4,541,611, Cl. 251-228.000.

Frank, Robert G.; and Noca, Joseph A., to PPG Industries, Inc. Means and method for lubricating core drills. 4,541,758, Cl. 408-1.0BD.

Frankel, Bruce: *See—*
Jerge, Charles R.; Frankel, Bruce; and Zoll, Karl, 4,541,992, Cl. 422-300.000.

Fraser, Allister F.; and Alsbach, Walter G., to Hughes Aircraft Company; and International Telecommunications Satellite Organization. Solar cell array panel and method of manufacture. 4,542,257, Cl. 136-251.000.

Fraver S.A.: *See—*
Schaul, Jean-Paul, 4,541,337, Cl. 101-227.000.

Frazier Precision Instrument Company, Inc.: *See—*
Layer, Howard P., 4,541,496, Cl. 177-211.000.

Freeman, William T., to Polaroid Corporation. Photographic camera with electronic image enhancement. 4,541,704, Cl. 354-432.000.

Freston, Trevor R.: *See—*
Reynolds, Keith B.; Freston, Trevor R.; Ord, Richard N.; and Houghton, James T., 4,541,757, Cl. 407-53.000.

Freud, Paul J.; Baxter, Ronald D.; and Kroninger, Paul M., Jr., to General Signal Corporation. Pressure transducer and mounting. 4,542,435, Cl. 361-283.000.

Friedemann, Wolfgang: *See—*
Maak, Norbert; Friedemann, Wolfgang; Fehr, Hans; and Feulner, Kurt, 4,541,869, Cl. 106-38.350.

Friedopfer, Walter: *See—*
Winger, Irwin; and Friedopfer, Walter, 4,541,696, Cl. 351-123.000.

Fromson, Robert E., to Westinghouse Electric Corp. Controlled metal removal by parallel-to-face electrochemical machining. 4,541,909, Cl. 204-129.200.

Frye, Kenneth G.; and Gill, Michael L., to Beloit Corporation. Compliant drum and rider roll. 4,541,585, Cl. 242-66.000.

Fuchs, Helmut: *See—*
Fiedler, Karl E.; and Fuchs, Helmut, 4,541,679, Cl. 339-97.00P.

Fugedi, Peter: *See—*
Szejtli, Jozsef; Liptak, Andras; Nanasi, Pal; Fugedi, Peter; Jodal, Ildiko; Kandra, Lili; and Janossy, Lorant, 4,542,211, Cl. 536-103.000.

Fuji Electric Company Ltd.: *See—*
Yokoyama, Shotaro; and Nishibe, Takashi, 4,542,289, Cl. 250-201.000.

Fuji Jukogyo Kabushiki Kaisha: *See—*
Morikawa, Koji, 4,541,387, Cl. 123-481.000.
Nakazato, Kazuo, 4,541,384, Cl. 123-437.000.
Sakai, Tatsuo, 4,541,370, Cl. 123-56.0AC.
Sugiura, Katsuhiko, 4,541,381, Cl. 123-407.000.

Fuji Photo Film Co., Ltd.: *See—*
Harada, Shigeo, 4,542,388, Cl. 346-76.00L.
Ochi, Shigeharu, 4,542,409, Cl. 358-212.000.
Ohki, Nobutaka; Tsubota, Motohiko; Morigaki, Masakazu; and Hamaoka, Tsutomu, 4,542,086, Cl. 430-218.000.
Sasaki, Noboru; Ishikawa, Takatoshi; and Adachi, Keiichi, 4,542,091, Cl. 430-380.000.
Suzuki, Tamotsu; Nishikawa, Sumio; and Tatsuta, Sumitaka, 4,542,093, Cl. 430-523.000.
Takahashi, Hiroshi; Nishioka, Akira; Tokunaga, Fumihiro; Aotani, Yoshimasa; and Aono, Koichiro, 4,542,085, Cl. 430-158.000.
Toya, Ichizo; and Takahashi, Osamu, 4,542,092, Cl. 430-510.000.

Fuji Photo Optical Co., Ltd.: *See—*
Itamoto, Shigeru; Yasuda, Kenji; and Mikami, Senji, 4,541,717, Cl. 356-244.000.

Fuji Xerox Co., Ltd.: *See—*
Suganuma, Saburo; Kataoka, Hiroyuki; and Arai, Yoshio, 4,542,378, Cl. 340-734.000.

Fujibayashi, Kenji, to Olympus Optical Co., Ltd. Muting circuit in combination with a tape recorder. 4,542,421, Cl. 360-67.000.

Fujii, Toshihiro: *See—*
Kitahara, Shizuo; Fujii, Toshihiro; and Sugi, Nagatoshi, 4,542,190, Cl. 525-332.600.

Fujikake, Masato: *See—*
Obayashi, Shigeji; Nakamura, Morio; Yamamoto, Takushi; and Fujikake, Masato, 4,541,871, Cl. 106-197.200.

Fujikawa, Tadashi: *See—*
Ideta, Yasufumi; and Fujikawa, Tadashi, 4,541,791, Cl. 418-182.000.

Fujikura Ltd.: *See—*
Chabata, Sueji; Nakano, Keiji; Ito, Kichizo; Ueda, Katsuhiko; Iizuka, Hirokazu; Miyako, Hisao; and Fukagawa, Katsumi, 4,542,064, Cl. 428-383.000.

Fujimori, Kyoichi: *See—*
Oshizawa, Hidekazu; and Fujimori, Kyoichi, 4,541,380, Cl. 123-357.000.

Fujimura, Gen, to Kewpie Kabushiki Kaisha. Method of and apparatus for separating white from yolk of an egg. 4,541,330, Cl. 99-500.000.

Fujimura, Hajime: *See—*
Hori, Mikio; and Fujimura, Hajime, 4,542,215, Cl. 544-126.000.

Fujioka, Futoshi: *See—*
Sprecker, Mark A.; Schreiber, William L.; Fujioka, Futoshi; Boden, Richard M.; Vock, Manfred H.; Whelan, Patrick; and Hanna, Marie R., 4,541,949, Cl. 252-522.00R.

Fujisawa, Koichi: *See—*
Kobayashi, Kyoji; Kato, Masaru; and Fujisawa, Koichi, 4,542,325, Cl. 318-483.000.

Fujita, Kazuo. Rotating shaft of roller screw structure and its driven device. 4,541,297, Cl. 74-424.600.

Fujitsu Limited: *See—*
Amemiya, Shin-ichi, 4,541,437, Cl. 128-663.000.
Baba, Fumio, 4,542,307, Cl. 307-482.000.
Okada, Toshiro, 4,542,351, Cl. 331-11.000.
Shimoyama, Haruo; Ohshima, Toshio; Nomoto, Shinobu; Hiraoka, Makoto; and Hanabata, Toshio, 4,542,406, Cl. 358-141.000.
Shirato, Takehide, 4,542,482, Cl. 365-182.000.
Takeyama, Akira; Tazaki, Kenshi; Nojima, Satoshi; Aritaka, Norihiro; and Mita, Teruyoshi, 4,542,496, Cl. 370-16.000.

Fujiwara, Masakatu; Miyamoto, Takeshi; Kuzuhara, Hiroshi; and Morimoto, Toshiya, to Sanyo Electric Co., Ltd. Food processor. 4,541,573, Cl. 241-36.000.

Fujiwara, Takashi: *See—*
Imaizumi, Mamoru; Fujiwara, Takashi; and Kobayashi, Masanari, 4,541,747, Cl. 400-144.200.

Fukagawa, Katsumi: *See—*
Chabata, Sueji; Nakano, Keiji; Ito, Kichizo; Ueda, Katsuhiko; Iizuka, Hirokazu; Miyako, Hisao; and Fukagawa, Katsumi, 4,542,064, Cl. 428-383.000.

Fukai, Yoshio; Yamamoto, Masato; and Hanawaka, Masuo, to Yokogawa Hokushin Electric Corporation. Programmable controller. 4,542,452, Cl. 364-141.000.

Fukaya, Chikara: *See—*
Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; Inoue, Yoshihisa; Naito, Youichiro; and Suyama, Tadakazu, 4,542,147, Cl. 514-411.000.

Fukino, Masato: *See—*
Yanai, Tokiyoshi; Yamaguchi, Hirotsugu; Fukino, Masato; and Aoyama, Yutaka, 4,541,499, Cl. 180-142.000.

Fukuda, Katsumi; Ebihara, Masaharu; Hayakumo, Tadahiko; and Todoroki, Tsunehiko, to Matsushita Electric Industrial Co., Ltd. Discharge direction control device for air conditioner. 4,541,326, Cl. 98-40.250.

Fukuda, Kiyoshi: *See—*
Furukawa, Kazuyoshi; Shimbo, Masaru; Fukuda, Kiyoshi; and Tanzawa, Katsujirou, 4,542,105, Cl. 501-22.000.

Fukuda, Masao: *See—*
Kumata, Koji; and Fukuda, Masao, 4,542,165, Cl. 521-137.000.

Fukuda, Shinichiro: *See—*
Fuse, Shigeru; Takashima, Masatake; Fukuda, Shinichiro; and Shibata, Hiroyuki, 4,542,412, Cl. 358-260.000.

Fukuma, Toshiaki: *See—*
Watanabe, Haruo; Seto, Junetsu; Suzuki, Kiyosuke; and Fukuma, Toshiaki, 4,542,084, Cl. 430-46.000.

Fukumura, Yukio, to Nippon Electric Co., Ltd. Radio transmitter/-receivers with non interferring local oscillator frequency. 4,542,531, Cl. 455-76.000.

Fukuoka, Shigetaka. Freeze-thaw stable stoneware tile and process for production thereof. 4,542,058, Cl. 428-134.000.

Fukushima, Nobuo; Kitamura, Shuji; Nakae, Kiyohiko; Kotani, Kozo; Terazawa, Takayuki; and Nakarai, Toyoaki, to Sumitomo Chemical Company, Limited. Plastic film. 4,542,061, Cl. 428-220.000.

Fukuta, Kinsho; and Kanamaru, Makoto, to Toyota Jidosha Kabushiki Kaisha; and Shiroki Kinzoku Kogyo Kabushiki Kaisha. Reclining angle adjustment device. 4,541,672, Cl. 297-367.000.

Fukutomi, Yohji: *See*—
Kobayashi, Hideo; and Fukutomi, Yohji, 4,541,400, Cl. 123-589.000.

Fuller, Robert A.: *See*—
Morris, Jeffrey D.; and Fuller, Robert A., 4,542,196, Cl. 526-64.000.

Fuller, Stephen C.: *See*—
Bruning, John W.; and Fuller, Stephen C., 4,542,390, Cl. 346-140.00R.

Fumex AB: *See*—
Lundstrom, Barry, 4,541,327, Cl. 98-115.400.

Fuminier, Claude, to Pont A Mousson S.A. Method and apparatus for cutting circular or oval pipes. 4,541,316, Cl. 82-59.000.

Furlan, Piero: *See*—
Civilla, Enzo; Furlan, Piero; and Maccone, Sergio, 4,541,860, Cl. 71-120.000.

Furukawa, Kazuyoshi; Shimbo, Masaru; Fukuda, Kiyoshi; and Tanzawa, Katsujirou, to Tokyo Shibaura Denki Kabushiki Kaisha. Glass composition for covering semiconductor element. 4,542,105, Cl. 501-22.000.

Fuse, Shigeru; Takashima, Masatake; Fukuda, Shinichiro; and Shibata, Hiroyuki, to Shaken Co., Ltd. Method for compressing character or pictorial image data. 4,542,412, Cl. 358-260.000.

Futaba Denshi Kogyo K.K.: *See*—
Morimoto, Kiyoshi; and Watanabe, Hiroshi, 4,542,317, Cl. 313-496.000.

G.D. Societa Per Azioni: *See*—
Seragnoli, Enzo, 4,541,221, Cl. 53-396.000.

GA Technologies Inc.: *See*—
Woolf, Lawrence D., 4,541,411, Cl. 126-390.000.

Gaa, Peter C., to PPG Industries, Inc. Chemically treated glass fibers and strands and dispersed products thereof. 4,542,065, Cl. 428-391.000.

GAF Corporation: *See*—
Lewis, David F., 4,542,090, Cl. 430-296.000.
Whichard, Matthew C., 4,542,068, Cl. 428-290.000.

Gagnon, Paul L. Portable beam clamp. 4,541,155, Cl. 24-486.000.

Gailus, Paul H.: *See*—
Yester, Francis R., Jr.; Gailus, Paul H.; and Louis, Edward V., 4,542,352, Cl. 331-96.000.

Galie, John R.; Goth, George R.; Hansen, Thomas A.; and Villetto, Robert T., Jr., to International Business Machines Corporation. Method for making metal contact studs between first level metal and regions of a semiconductor device compatible with polyimide-filled deep trench isolation schemes. 4,541,168, Cl. 29-579.000.

Gallant, Mark U. Disposable table covering. 4,542,050, Cl. 428-35.000.

Gallitzendorfer, Josef; Gotz, Hans; Pfeiffer, Peter; and Tomforde, Johann, to Daimler-Benz Aktiengesellschaft. Water conduit for a lateral area of a windshield of a motor vehicle. 4,541,664, Cl. 296-213.000.

Galloway, Jennifer C.: *See*—
Gorman, William G.; Popp, Karl F.; Galloway, Jennifer C.; and Sedlock, David M., 4,542,125, Cl. 514-57.000.

Gammill, Ronald B., to Upjohn Company, The. 4-Hydroxy-furochromone intermediates for antiatherosclerotic compounds. 4,542,228, Cl. 549-387.000.

Gang-Nail Systems, Inc.: *See*—
Gottlieb, Robert, 4,541,218, Cl. 52-694.000.

Gannaway, Thomas W.: *See*—
Zimmerman, Bonnie L.; Gannaway, Thomas W.; Resinski, Lawrence J.; and DeVita, Philip S., 4,541,806, Cl. 434-258.000.

Gano, Barclay P.; and Rucker, James L., to Owens-Corning Fiberglas Corporation. Method and apparatus to automatically apply a liquid dust inhibitor to fiberglass blowing wool. 4,542,044, Cl. 427-215.000.

Garbarino, Paul L.: *See*—
Chakravarti, Satya N.; Garbarino, Paul L.; and Miller, Donald A., 4,542,340, Cl. 324-158.00R.

Garceau, Roger: *See*—
Molina-Negro, Pedro; and Garceau, Roger, 4,541,432, Cl. 128-421.000.

Garner, James W.: *See*—
Jack, Douglas S.; and Garner, James W., 4,541,938, Cl. 252-33.000.

Garrett, Dennis L., to International Housing Limited. Insulated concrete wall. 4,541,211, Cl. 52-98.000.

Garrison, Dana R.: *See*—
Higgins, Queenie D.; and Garrison, Dana R., 4,541,360, Cl. 119-1.000.

Gartner, Fritz, to Josef Gartner & Co. Swing-tilt fitting for window or doors. 4,541,200, Cl. 49-192.000.

Gasser, Oswald: *See*—
Jochum, Peter; and Gasser, Oswald, 4,542,172, Cl. 523-116.000.

Gatellier, Christian: *See*—
Riboud, Paul-Victor; and Gatellier, Christian, 4,541,863, Cl. 75-24.000.

Gautier, Patrick: *See*—
Bernhart, Claude; Cautreels, Werner; and Gautier, Patrick, 4,542,134, Cl. 514-236.000.

Gay, Robert R.: *See*—
Tanner, David P.; Morel, Don L.; and Gay, Robert R., 4,542,255, Cl. 136-249.000.

Gebr. Eickhoff Maschinenfabrik und Eisengiesserei m.b.H.: *See*—
Hotger, Karl, 4,541,607, Cl. 251-63.400.

Gebr. Happich GmbH: *See*—
Schwanitz, Konrad; and Mahler, Gert, 4,541,663, Cl. 296-97.00H.

GEC Avionics Limited: *See*—
Pearce, David W., 4,542,260, Cl. 174-52.0PE.

Gehlke, Scott J. S.; Yost, Michael G.; and Steinman, Arnold J., to Ion Systems, Inc. Method and apparatus for sequenced bipolar air ionization. 4,542,434, Cl. 361-231.000.

Geiger, Leroy. Pressure regulation in pumping a liquid. 4,541,395, Cl. 123-514.000.

Geisen, Karl: *See*—
Hitzel, Volker; Weyer, Rudi; Geisen, Karl; and Ritzel, Harald, 4,542,127, Cl. 514-161.000.

Geke, Juergen; and Rehm, Hans-Joerg, to Henkel Kommanditgesellschaft auf Aktien. Liquid neutral one package coagulating agents for lacquers and coating materials. 4,541,931, Cl. 210-728.000.

Gelhaar, Rolf: *See*—
Schade, Horst J.; Gelhaar, Rolf; and Hartmann, Wolfgang, 4,541,849, Cl. 55-146.000.

Gelhard, Egon. Bicycle, in particular with an electromotor. 4,541,500, Cl. 180-205.000.

Gelin, Robert J.: *See*—
Calvert, Scott A.; Gelin, Robert J.; and Aberegg, Dale, 4,541,130, Cl. 4-593.000.

Gelosa, Davino: *See*—
Santacesaria, Elio; Codignola, Franco; Gelosa, Davino; and Carra', Sergio, 4,542,254, Cl. 585-828.000.

Gemmill, Robert M., Jr.: *See*—
Horodysky, Andrew G.; and Gemmill, Robert M., Jr., 4,541,941, Cl. 252-49.600.

General Dynamics Corporation: *See*—
Foley, William H., 4,541,594, Cl. 244-114.00B.

General Electric Company: *See*—
Case, Allen W., Jr.; Ringwall, Carl G.; and Pollick, Michael L., 4,542,279, Cl. 219-124.340.
Collins, Robert P.; Haim, Elias S.; and Rowen, John A., 4,541,692, Cl. 350-339.00R.
Eddy, Victoria J.; and Hallgren, John E., 4,542,226, Cl. 549-214.000.
Kornrumpf, William P.; and Alley, Robert P., 4,541,288, Cl. 73-862.690.
Parker, James S., 4,542,533, Cl. 455-182.000.
Rieck, Harold P.; and Kirkpatrick, Ralph A., 4,541,774, Cl. 415-115.000.
Riederer, Stephen J., 4,542,459, Cl. 364-414.000.
Sexton, Daniel W., 4,542,353, Cl. 331-143.000.
Shah, Kirti C., 4,541,732, Cl. 374-117.000.
Swetnam, Norman T., 4,541,538, Cl. 220-3.800.

General Foods Corporation: *See*—
Coad, Edward F.; and Laird, Carol G., 4,541,227, Cl. 53-500.000.
Schenz, Timothy W.; Eisenhardt, William A., Jr.; and Saleeb, Fouad Z., 4,541,873, Cl. 127-46.100.

General Motors Coporation: *See*—
Lederman, Frederick E., 4,541,744, Cl. 384-607.000.

General Motors Corporation: *See*—
Abu-Isa, Ismat A., 4,541,735, Cl. 374-188.000.
Caudill, Charles, Jr., 4,541,885, Cl. 156-220.000.
Lederman, Frederick E., 4,541,742, Cl. 384-518.000.
O'Dea, James D.; and Venable, Glen J., 4,541,827, Cl. 493-309.000.
Schubring, Norman W., 4,541,729, Cl. 374-31.000.

General Signal Corporation: *See*—
Freud, Paul J.; Baxter, Ronald D.; and Kroninger, Paul M., Jr., 4,542,435, Cl. 361-283.000.

Generalimpex: *See*—
Gomory, Pal; Hegedus, Janos; Kiss, Ferenc; and Simon, Attila, 4,541,488, Cl. 166-307.000.

George Washington University, The: *See*—
Nakatsuka, Iwao; Eckelman, William; and Rzeszotarski, Waclaw J., 4,541,957, Cl. 260-397.200.

Gerber Legendary Blades: *See*—
Collins, Walter W.; and Reinschreiber, Jonathan P., 4,541,556, Cl. 224-196.000.

Gerhardus, Ulrich: *See*—
Hibbel, Josef; Gerhardus, Ulrich; Schmidt, Volkmar; Lieder, Bernhard; Scheve, Heinrich; and Zerres, Erwin, 4,541,840, Cl. 48-63.000.

Gerke, Dieter; Muller, Manfred; Zytowski, Peter; and Radelow, Wolfgang, to Krone GmbH. Connector block with solderless, non-screwed and stripping-free terminals having a polytropic air gap for terminating communication cables and dropwire cables. 4,541,682, Cl. 339-111.000.

Gernand, Martin O.: *See*—
Seiver, Robert L.; and Gernand, Martin O., 4,541,925, Cl. 208-216.00R.

Gershoni, Johathan M.: *See*—
Davis, Fred E., III; and Gershoni, Johathan M., 4,541,910, Cl. 204-182.800.

GHD-Dwyer (WA) Pty. Ltd.: *See*—
Phillips, John T., 4,541,752, Cl. 405-129.000.

Giachetti, Ettore: *See*—
Mayr, Adolfo; Giannini, Umberto; Susa, Ermanno; Longi, Paolo; Giachetti, Ettore; and DeLuca, Domenico, 4,542,198, Cl. 526-125.000.

Giachetti, Franco. Apparatus for loading and replacing piece goods, capable of being coupled to spreading machines. 4,541,522, Cl. 198-465.100.

Giacomello, Giacomo G. Metal tape transducer for the micrometric measurement linear quantities. 4,541,181, Cl. 33-125.00C.

Giannini, Umberto; Longi, Paolo; Deluca, Domenico; and Pivotto, Bruno, to Montecatini Edison S.p.A. Polymerization catalyst. 4,542,197, Cl. 526-125.000.

Giannini, Umberto: *See*—
Mayr, Adolfo; Giannini, Umberto; Susa, Ermanno; Longi, Paolo; Giachetti, Ettore; and DeLuca, Domenico, 4,542,198, Cl. 526-125.000.

Giannone, Charles, to Duro Dyne Corporation. Cinching clamp device and method of attachment. 4,541,146, Cl. 24-20.00R.

GIB Precision Limited: *See*—
Beasant, Andrew J.; Orwin, Olaf J. B.; and Fortune, David J., 4,541,512, Cl. 192-56.00R.

Gibellato, Silvano. Universal folding ladder for boats. 4,541,507, Cl. 182-86.000.

Gibson, Dennis H., to Caterpillar Tractor Co. Timing control for fuel injection apparatus. 4,541,391, Cl. 123-500.000.

Giebeler, Robert H., Jr., to Beckman Instruments, Inc. Centrifugal oil pump flow proportioning and cooling system. 4,541,736, Cl. 384-465.000.

Giesecke, Henning: *See*—
Sirinyan, Kirkor; Merten, Rudolf; Wolf, Gerhard D.; Giesecke, Henning; Claussen, Uwe; and Ebneth, Harold, 4,542,074, Cl. 428-450.000.

Giesen, Karl: *See*—
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Gill, Michael L.: *See*—
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Giller, Arnold; and Weil, Joachim, to Hoechst Aktiengesellschaft. Process for the preparation of reinforced rubber vulcanisates and the use thereof. 4,542,186, Cl. 525-138.000.

Gillette Company, The: *See*—
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Gillot, Jacques: *See*—
Batigne, Jean; Deslandes, Claude; Gillot, Jacques; and Tritten, Paul, 4,541,976, Cl. 264-69.000.

Gilson, Karle B.: *See*—
Arena, Joseph W.; Gilson, Karle B.; Malcolm, David T.; and Mellander, John A. R., 4,541,880, Cl. 156-94.000.

Giovanni Mazza: *See*—
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Giulini Chemie GmbH: *See*—
Faessle, Fritz; and Stadler, Siegmund, 4,541,471, Cl. 164-6.000.

Glaverbel: *See*—
Delzant, Marcel, 4,542,066, Cl. 428-406.000.

Glazer, Alexander N.: *See*—
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Gleason, Robert F.: *See*—
Caverly, Lendall R., Jr.; Gleason, Robert F.; Hadfield, Don A.; McNerney, Norman E.; Meade, Daniel A.; Richardson, Alfred G.; Semitros, Nicholas; and Thornton, Martin Q., 4,541,970, Cl. 264-1.500.

Gleixner, Klaus, to Hoechst Aktiengesellschaft. Pharmaceutical compositions of xanthine derivatives tolerated by the stomach and process for their preparation. 4,542,011, Cl. 424-16.000.

Glomski, Ronald L.: *See*—
Thomson, Timothy; and Glomski, Ronald L., 4,541,965, Cl. 260-505.00C.

Gloyeski, David D.: *See*—
Brandyberry, Robert E.; Forbes, Mark M.; Gloyeski, David D.; Greafnitz, Russell F.; Phillips, Glen R.; Straw, Robert L.; Stricker, Kevin L.; Szabela, William A.; Webeck, Richard R.; Mayfield, Glenn A.; and Vollmer, William L., 4,542,469, Cl. 364-483.000.

Goddard, John; Mills, David; and Moulden, Alan J., to Rolls-Royce Limited. Method of, and apparatus for, producing castings in a vacuum. 4,541,475, Cl. 164-65.000.

Godlewski, Robert E., to Union Carbide Corporation. Organosiliconoxirane additives for filled condensation polymer composites. 4,542,174, Cl. 523-508.000.

Goetze AG: *See*—
Buran, Ulrich; Fischer, Manfred; and Neuehauser, Hans J., 4,542,111, Cl. 501-127.000.

Golarz, Jeffrey, to Simplex Time Recorder Co. Time card and carrier. 4,542,286, Cl. 235-377.000.

Goldberg, James R.: *See*—
Cole, Harold E., 4,541,795, Cl. 425-437.000.

Goldner, Walther, to Keiper Recaro GmbH & Co. Vehicle seat having an adjustable thigh supports. 4,541,669, Cl. 297-284.000.

Goldowsky, Michael P.: *See*—
Newman, Wyatt S.; and Goldowsky, Michael P., 4,542,311, Cl. 310-13.000.

Gomory, Pal; Hegedus, Janos; Kiss, Ferenc; and Simon, Attila, to Generalimpex. Process for increasing the water discharge of water delivering drilled wells, previously used for water delivery, and having decreased water discharge. 4,541,488, Cl. 166-307.000.

Goodfellow, Robert C.; and Harding, Malcolm E., to Plessey Overseas Limited. Semi-conductor lasers. 4,542,511, Cl. 372-46.000.

Gorman, William G.; Popp, Karl F.; Galloway, Jennifer C.; and Sedlock, David M., to Sterling Drug Inc. Antimicrobial surface degerming compositions and method of use thereof. 4,542,125, Cl. 514-57.000.

Goss, Gary J.; Moles, Robert G. H.; Hinrichs, Randall D.; and Holtey, Thomas O., to Honeywell Information Systems Inc. Digital serial interface with encode logic for transmission. 4,542,517, Cl. 375-36.000.

Goth, George R.: *See*—
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Gottlieb, Robert, to Gang-Nail Systems, Inc. Truss structures constructed with metal web members. 4,541,218, Cl. 52-694.000.

Gotz, Hans: *See*—
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Gould, Russell J., to Diamond Guard, Inc. Baseball protection device. 4,541,127, Cl. 2-19.000.

Govan, Edward; and Irvine, Robert, to Pitney Bowes Inc. Document stacking and conveying apparatus. 4,541,764, Cl. 414-52.000.

Goy, Nicholas M.: *See*—
Wainwright, Ronald C.; Goy, Nicholas M.; Anderson, John D.; Pettigrew, Robert M.; and Bradbrook, John D., 4,541,695, Cl. 350-429.000.

Graebe, Robert H. Multicell cushion. 4,541,136, Cl. 5-456.000.

Graf, Harlan G.; Janssen, Harry R.; Edwards, Don L.; and Duren, Don D., to Conoco Inc. High temperature slide valve. 4,541,453, Cl. 137-315.000.

Graham, Clarence O., Jr.; Shepard, Charles L.; Ruppenicker, George F., Jr.; and Kullman, Russell M. H., to United States of America, Agriculture. Process for reinforced yarn with glass fiber core. 4,541,231, Cl. 57-12.000.

Graham Magnetics Incorporated: *See*—
Essary, James W.; and Sanderson, Robert A., 4,541,579, Cl. 242-56.200.

Graham, Neil B., to National Research Development Corporation. Preparation of particulate gels. 4,542,176, Cl. 524-543.000.

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Grapha-Holding AG: *See*—
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Graves, Clint; and Marcon, Mario. Cryogenic trap and pump system. 4,541,249, Cl. 62-55.500.

Gray, George W.; Lacey, David; Pellatt, Martin G.; and Sturgeon, Bennett, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Liquid crystals esters. 4,542,230, Cl. 560-01.000.

Gray, Roy A.; and Macdonell, Gary D., to Phillips Petroleum Company. Mercaptohydroxy alkanes. 4,542,241, Cl. 568-62.000.

Graziani, Kenneth R.; and Sapre, Ajit V., to Mobil Oil Corporation. Multi-stage adiabatic process for methanol conversion to light olefins. 4,542,252, Cl. 585-640.000.

Greafnitz, Russell F.: *See*—
Brandyberry, Robert E.; Forbes, Mark M.; Gloyeski, David D.; Greafnitz, Russell F.; Phillips, Glen R.; Straw, Robert L.; Stricker, Kevin L.; Szabela, William A.; Webeck, Richard R.; Mayfield, Glenn A.; and Vollmer, William L., 4,542,469, Cl. 364-483.000.

Great Lakes Carbon Corporation: *See*—
Secrist, Duane R.; Clark, James M.; and Landon, Thomas E., 4,541,912, Cl. 204-290.00R.

Great Plains Ventures: *See*—
Greenlee, Fred S., III, 4,541,520, Cl. 198-372.000.

Green Cross Corporation, The: *See*—
Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; Inoue, Yoshihisa; Naito, Youichiro; and Suyama, Tadakazu, 4,542,147, Cl. 514-411.000.

Green, John. Flange lock. 4,541,256, Cl. 70-232.000.

Greenlee, Fred S., III, to Great Plains Ventures. Right angle transfer conveyor system and a method for transferring articles at a right angle. 4,541,520, Cl. 198-372.000.

Gregory, Reginald; and Westlake, David J., to British Petroleum Company, p.l.c., The. Use of stabilized pillared interlayered clays as catalyst in alkylation reactions. 4,542,250, Cl. 585-467.000.

Greiert, Alfred H., to Boeing Company, The. Removable slider shoe for a translating sleeve used on a jet engine cowl and duct. 4,541,673, Cl. 308-3.00R.

Grenfell, Julian P.; and Stephens, Stanley W., to Sale Tilney Technology PLC. Mercury dispenser for electric discharge lamps. 4,542,319, Cl. 313-546.000.

Grenier, Maurice: *See*—
Bosquain, Maurice; Grenier, Maurice; Hay, Leon; Lapeyre, Paul; Lehman, Jean-Yves; Petit, Pierre; and Sauty, Pierre, 4,541,851, Cl. 55-208.000.

Gretz, Charles; and Kandel, Gerald J., to Life-Like Products, Inc. Thermally insulated chest. 4,541,540, Cl. 220-20.000.

Griffin, William R.: *See*—
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Griffioen, G., to Giovanni Mazza. Potential equalizing apparatus. 4,542,302, Cl. 307-326.000.

Grill, Benjamin: *See*—
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Grise, Frederick G. J., to Flexwatt Corporation. Electrical heater. 4,542,285, Cl. 219-543.000.

Gross, Benjamin; Haddad, James H.; and Malladi, Madhava, to Mobil Oil Corporation. Method and apparatus for regenerating cracking catalyst. 4,541,921, Cl. 208-164.000.

Grosse, Arsene; Harder, Hans E.; and Klietz, Jurgen, to Howmedica International, Inc. Distal aiming device for a locking nail. 4,541,424, Cl. 128-92.0EB.
Gruber, William P.: *See*—
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Grumpelt, Heinrich; and Jaroch, Johannes, to C. Deilmann AG. Apparatus for recovering energy from pyrolyzable, carbonaceous waste materials of varying composition. 4,541,345, Cl. 110-229.000.
Grunfeld, Detmar. Connections for tubular bicycle frame and fork components and method of making the same. 4,541,649, Cl. 280-281.00R.
Gruppo Lepetit S.p.A.: *See*—
Borghi, Angelo; Pallanza, Rosa; Coronelli, Carolina; and Cassani, Giovanni, 4,542,018, Cl. 424-119.000.
GTE Laboratories Incorporated: *See*—
Pasto, Arvid E., 4,542,109, Cl. 501-97.000.
GTE Lenkurt Incorporated: *See*—
Brady, Douglas M., 4,542,265, Cl. 179-170.200.
GTE Products Corporation: *See*—
Hsieh, Martin Y., 4,542,072, Cl. 428-446.000.
Guadagno, Philip A., to Helena Laboratories Corporation. Test pad for detecting occult blood. 4,541,987, Cl. 422-56.000.
Guagliumi, Renato; and Perga, Giampiero, to Marelli Autronica S.p.A. Device for monitoring the pressure of fluid in a duct. 4,541,284, Cl. 73-730.000.
Gugel, Bernd, to Mannesmann AG. Print head construction. 4,541,745, Cl. 400-124.000.
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Gutleber, Frank S., to United States of America, Army. Multilevel mate pair code compressor for codes expanded by the process of butting. 4,542,515, Cl. 375-17.000.
Gygi, Martin H. Milling process and roller mill. 4,541,574, Cl. 241-57.000.
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Haessler, Heinrich; and Kuhl, Wilfried, to Siemens Aktiengesellschaft. Contact arrangement for vacuum switches. 4,542,266, Cl. 200-144.00B.
Hafner, Hans W., to Pfister GmbH. Method and apparatus for measuring the pressure of a liquid. 4,541,285, Cl. 73-744.000.
Hagedorn, Scott, to Celanese Corporation. Strain of *Pseudomonas putida* for producing an intermediate compound in the production of para-cresol. 4,542,100, Cl. 435-253.000.
Hagen, Mark D.; Mendel, Peter J.; and Regehr, John L., to International Business Machines Corporation. Rotatable display work station. 4,542,377, Cl. 340-727.000.
Hahn, Alfred; Rauch, Werner; and Barthelmes, Norbert, to Siemens Aktiengesellschaft. Radiographic installation for an x-ray examination apparatus. 4,542,521, Cl. 378-155.000.
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Hakola, Gordon R. Quick release cyclone apex system. 4,541,934, Cl. 210-787.000.
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Hall, Dale R.; and Jackson, Robert L., to B. F. Goodrich Company, The. Intumescent flame retarded polyurethane compositions. 4,542,170, Cl. 523-179.000.
Hall, John B.; and Sprecker, Mark A., to International Flavors & Fragrances Inc. 1(1,3-Dioxobutane)-3,3-dimethylcyclohexane useful in perfumes. 4,541,951, Cl. 252-522.00R.
Hall, Robert; and Ainsworth, Thomas S., to Thorn EMI plc. Discharge lamps. 4,542,316, Cl. 313-318.000.
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Hara, Mitsuhiko, to Victor Company of Japan, Ltd. Dusttight tape cassette. 4,541,581, Cl. 242-198.000.
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Hauser, Ray L.; and McKeever, Rodney B., to Hauser, Ray L. Device and method for measuring heat flux and method for forming such a device. 4,541,728. Cl. 374-29.000.
Hausler, Gerd; Jarisch, Walter; and Makosch, Gunter, to International Business Machines Corporation. Apparatus for phase symmetrizing optical wave fronts. 4,541,720, Cl. 356-345.000.
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Head, Thomas F., to Environmental Interiors, Inc. Suspended ceiling system. 4,541,216, Cl. 52-484.000.
Heath Company: *See*—
Hornback, Donald L., 4,542,326, Cl. 318-565.000.
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Fiala, Peter E.; Davis, Gerald E.; Tuma, Alan J.; and Hart, Jack E., 4,541,595, Cl. 244-129.300.
Hegarty, William P., to Air Products and Chemicals, Inc. Process for the recovery and recycle of effluent gas from the regeneration of particulate matter with oxygen and carbon dioxide. 4,542,114, Cl. 502-39.000.
Hegedus, Janos: *See*—
Gomory, Pal; Hegedus, Janos; Kiss, Ferenc; and Simon, Attila, 4,541,488, Cl. 166-307.000.
Hegedus, Louis: *See*—
Kim, Gwan; Pereira, Carmo J.; Hegedus, Louis; and Maselli, James M., 4,541,995, Cl. 423-213.500.
Pereira, Carmo J.; Hegedus, Louis; and Maselli, James M., 4,541,996, Cl. 423-213.500.
Heidler, Lester D.; Styer, Richard D.; and Hunsberger, Enos R., to FMC Corporation. Interchangeable screen panels for a traveling water screen. 4,541,930, Cl. 210-344.000.
Heinrich, Friedrich: *See*—
Dorffel, Jorg; Lange, Erhard; Otte, Werner; and Heinrich, Friedrich, 4,542,194, Cl. 525-521.000.
Heitmann, Wilhelm: *See*—
Sommer, August; Brucker, Rainer; Heitmann, Wilhelm; and Wozny, Norbert, 4,541,897, Cl. 203-19.000.
Hekker, Roeland M. T.: *See*—
Howard, P. Guy; and Hekker, Roeland M. T., 4,541,689, Cl. 350-255.000.
Held, Kurt. Dual-belt press for the continuous production of laminates. 4,541,889, Cl. 156-583.500.
Helena Laboratories Corporation: *See*—
Guadagno, Philip A., 4,541,987, Cl. 422-56.000.
Heller, William C., Jr.: *See*—
Leatherman, Alfred F., 4,541,891, Cl. 156-379.600.
Helms, Richard A.: *See*—
Timm, Gerald W.; Helms, Richard A.; and Sandford, Donald L., 4,541,420, Cl. 128-79.000.
Hendricks, Arno: *See*—
Becker, Jorgen; Hendricks, Arno; Herchenbach, Horst; Steinbiss, Eberhard; and Rensinghoff, Werner, 4,541,245, Cl. 60-648.000.
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Geke, Juergen; and Rehm, Hans-Joerg, 4,541,931, Cl. 210-728.000.
Maak, Norbert; Friedemann, Wolfgang; Fehr, Hans; and Feulner, Kurt, 4,541,869, Cl. 106-38.350.
Vierkotter, Peter; Turk, Erich; Holdt, Bernd-Dieter; and Menke, Ronald, 4,541,551, Cl. 222-456.000.
Hennings, George N.: *See*—
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Henry, Richard T.: *See*—
Martin, Timothy J., Jr.; and Henry, Richard T., 4,541,544, Cl. 220-374.000.
Hensley, Charles T.: *See*—
Haury, John F.; and Hensley, Charles T., 4,542,030, Cl. 426-262.000.
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Becker, Jorgen; Hendricks, Arno; Herchenbach, Horst; Steinbiss, Eberhard; and Rensinghoff, Werner, 4,541,245, Cl. 60-648.000.
Herchenbach, Wolfgang; and Nischwitz, Dieter, to Rodi & Wienenberger AG. Watch strap with a catch, particularly articulated strap. 4,541,151, Cl. 24-265.0WS.
Herman, Martin A. Matrix balancing fixture. 4,541,604, Cl. 249-33.000.
Herman, Martin A. Article positioning device. 4,541,619, Cl. 269-43.000.
Herrick, Jerome N. Torque wrench. 4,541,309, Cl. 81-57.460.
Herten, Ernst; and Eiringhaus, Eilhelm, to William Prym-Werke Kg. Riveting press safety. 4,541,558, Cl. 227-1.000.
Hestehave, Borge; and Hestehave, Kjeld, to Bomatic, Inc. Blow molded container and supplemental handle therefor. 4,541,529, Cl. 206-510.000.
Hestehave, Kjeld: *See*—
Hestehave, Borge; and Hestehave, Kjeld, 4,541,529, Cl. 206-510.000.
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Allen, Ross R., 4,542,389, Cl. 346-140.00R.
Hibbel, Josef; Gerhardus, Ulrich; Schmidt, Volkmar; Lieder, Bernhard; Scheve, Heinrich; and Zerres, Erwin, to Ruhrchemie Aktiengesellschaft. Process and device for the discharge of ash-containing fuel residues. 4,541,840, Cl. 48-63.000.
Hickey, David J.; and Devery, Kieran, to Kieffer Paper Mills, Inc. Degradable litter covering for use in the brooding area of poultry houses. 4,541,359, Cl. 119-1.000.
Hickman, John R.; Kriska, Nicholas J.; Brechtelsbauer, Jeffrey H.; Mediate, Bruno A.; and Rotheiser, Jordan I., to Weatherchem Corporation. Tamper-resistant closure for dispensers. 4,541,541, Cl. 220-253.000.
Higgins, Queenie D.; and Garrison, Dana R. Disposable animal litter box. 4,541,360, Cl. 119-1.000.
Hill, Dwight D., to AT&T Bell Laboratories. Method and apparatus for performing range checks. 4,542,456, Cl. 364-200.000.
Hillman, Kevin P.: *See*—
Butcher, Ian; Carrick, Gordon S.; and Hillman, Kevin P., 4,542,028, Cl. 426-100.000.
Hillock, Edward E. Small craft plug detector. 4,542,373, Cl. 340-568.000.
Hilpert, Fritz; Kohm, Erich; Rudolph, Volker; and Wohnsdorf, Manfred, to International Business Machines Corporation. Print head for an electroerosion printer. 4,542,393, Cl. 346-163.000.
Himeno, Kiyoshi: *See*—
Niwa, Toshio; Himeno, Kiyoshi; and Yoshihara, Junji, 4,542,207, Cl. 534-630.000.
Hinrichs, Randall D.: *See*—
Goss, Gary J.; Moles, Robert G. H.; Hinrichs, Randall D.; and Holtey, Thomas O., 4,542,517, Cl. 375-36.000.
Hintermayr, Kurt: *See*—
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Hios Inc.: *See*—
Totsu, Katsuyuki, 4,541,266, Cl. 72-391.000.
Hirai, Kiyomiki: *See*—
Takeuchi, Koji; Abe, Masahiro; Ito, Nobuo; and Hirai, Kiyomiki, 4,542,202, Cl. 528-96.000.
Hiraki, Shunichi; Kumamaru, Kuniaki; Koshino, Yutaka; and Yonezawa, Toshio, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor device with multi-layered structure. 4,542,400, Cl. 357-54.000.
Hiramitsu, Tetsushi: *See*—
Ono, Satoshi; Sugita, Hiroshi; and Hiramitsu, Tetsushi, 4,541,301, Cl. 74-484.00R.
Hirao, Yoshikazu: *See*—
Kishi, Noriyuki; and Hirao, Yoshikazu, 4,541,386, Cl. 123-479.000.
Hiraoka, Makoto: *See*—
Shimoyama, Haruo; Ohshima, Toshio; Nomoto, Shinobu; Hiraoka, Makoto; and Hanabata, Toshio, 4,542,406, Cl. 358-141.000.
Hirata, Goichi: *See*—
Samejima, Masayoshi; Hirata, Goichi; and Ishibashi, Takashi, 4,542,042, Cl. 427-213.360.
Hirata, Hidetoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Circuit for inductive heating apparatus with multiple high frequency energy sources. 4,542,273, Cl. 219-10.770.
Hiratsuka, Yutaka: *See*—
Osada, Hisajiro; Hiratsuka, Yutaka; and Watanabe, Masahiro, 4,541,718, Cl. 356-316.000.
Hirokoh, Nobuyoshi; Kageyama, Yoichi; Nakako, Yukio; and Matsumura, Tetsuo, to Mitsubishi Chemical Industries Ltd.; Kabushiki Kaisha Kobe Seikosho; Idemitsu Kosan Company Limited; Asia Oil Company Limited; and Nippon Brown Coal Liquefaction Co., Ltd. Process for converting coal. 4,541,914, Cl. 208-10.000.
Hirose, Takeo: *See*—
Kageyama, Minoru; Hirose, Takeo; Matsui, Tadao; Ogino, Hiroshi; Yoshida, Shiro; and Suzuki, Takayuki, 4,541,371, Cl. 123-65.0PE.
Hirose, Toshiharu: *See*—
Tsushima, Noriyuki; and Hirose, Toshiharu, 4,541,157, Cl. 29-149.50C.
Hirosue, Hideharu: *See*—
Abe, Eiichi; and Hirosue, Hideharu, 4,542,043, Cl. 427-213.000.
Hirschberg, Eugene H.: *See*—
Bertolacini, Ralph J.; Hirschberg, Eugene H.; and Modica, Frank S., 4,542,116, Cl. 502-65.000.
Hisanaga, Yorisato: *See*—
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Hitachi Chemical Company, Ltd.: *See*—
Nakada, Takao; Kamimura, Mamoru; and Ashizawa, Toranosuke, 4,542,110, Cl. 501-103.000.
Hitachi, Ltd.: *See*—
Akiyama, Nobuyuki; and Koizumi, Mitsuyoshi, 4,541,715, Cl. 356-237.000.
Kamimura, Hiroshi; and Ito, Tetsuo, 4,542,479, Cl. 364-900.000.
Kanamaru, Hisanobu; Tohkairin, Akira; and Kurosawa, Takuzo, 4,541,315, Cl. 82-40.00R.
Kitajima, Hiroyuki; Ohmachi, Kazuhiko; Doki, Mitsuru; Kazama, Junichi; and Kanao, Hidekazu, 4,542,458, Cl. 364-200.000.
Nagafuji, Motonobu, 4,542,476, Cl. 364-749.000.
Niinomi, Tatsuya; and Matsumo, Yoshio, 4,541,770, Cl. 414-730.000.
Nishida, Hiroshi; and Haruna, Toshiyuki, 4,542,429, Cl. 360-103.000.
Odaka, Yoshiyuki; Nakazato, Kouichi; and Tomita, Yoshifumi, 4,542,038, Cl. 427-68.000.
Osada, Hisajiro; Hiratsuka, Yutaka; and Watanabe, Masahiro, 4,541,718, Cl. 356-316.000.
Takasago, Masahiro; Maeda, Takeshi; Uno, Motoo; and Mizoguchi, Yasumitsu, 4,542,491, Cl. 369-45.000.
Takeuchi, Masato; Tobita, Hiroshi; Okabe, Sigeru; Okada, Hideo; and Tonami, Munehiko, 4,542,079, Cl. 429-39.000.
Yanadori, Michio; and Kawabata, Toshiaki, 4,541,261, Cl. 72-112.000.
Yatsuo, Tsutomu; Naito, Masayoshi; Nagano, Takahiro; Yasuda, Tomio; Onuki, Jin; Yanagi, Mitsuo; and Sato, Fumio, 4,542,398, Cl. 357-38.000.
Hitachi Maxell, Ltd.: *See*—
Sato, Akihiko, 4,541,588, Cl. 242-199.000.
Hitzel, Volker; Weyer, Rudi; Geisen, Karl; and Ritzel, Harald, to Hoechst Aktiengesellschaft. Antidiabetic salicylic acid derivatives. 4,542,127, Cl. 514-161.000.
Hitzel, Volker; Weyer, Rudi; Giesen, Karl; and Ritzel, Harald, to Hoechst Aktiengesellschaft. Sulfonylureas pharmaceutical formulations based on these compounds and their use for treatment of diabetes. 4,542,139, Cl. 514-312.000.
Hiwatashi, Takaaki: *See*—
Tamura, Setsuo; Motonaga, Kenjiro; Mizokawa, Takumi; Tanaka, Kozo; Kawashima, Katsumi; Hiwatashi, Takaaki; and Sugahara, Takayuki, 4,541,572, Cl. 241-31.000.
Hjertzen, Derrick G.: *See*—
Woodbridge, Keith W.; and Hjertzen, Derrick G., 4,541,741, Cl. 384-482.000.
Hoag, Jack E., to Hoag, Jack E. Vault mount for electrical apparatus. 4,541,209, Cl. 52-20.000.
Hoarler, Hansulrich, to BBC Brown, Boveri & Company, Limited. Self-priming centrifugal lubricating oil pump of an exhaust gas turbocharger. 4,541,785, Cl. 417-407.000.
Hoch, Dieter: *See*—
Hollmann, Siegfried; Hoch, Dieter; and Bollinger, Heribert, 4,541,442, Cl. 132-9.000.
Hodgkins, Harold M.: *See*—
Weiner, Andrew; and Hodgkins, Harold M., 4,541,190, Cl. 40-610.000.
Hoe, Dennis L.: *See*—
Lowenhaupt, E. Harris; Litz, John E.; and Hoe, Dennis L., 4,541,868, Cl. 75-101.00R.
Hoechst Aktiengesellschaft: *See*—
Giller, Arnold; and Weil, Joachim, 4,542,186, Cl. 525-138.000.
Gleixner, Klaus, 4,542,011, Cl. 424-16.000.
Hitzel, Volker; Weyer, Rudi; Geisen, Karl; and Ritzel, Harald, 4,542,127, Cl. 514-161.000.
Hitzel, Volker; Weyer, Rudi; Giesen, Karl; and Ritzel, Harald, 4,542,139, Cl. 514-312.000.
Kaminsky, Walter; Hahnsen, Heinrich; Kulper, Klaus; and Woldt, Rudiger, 4,542,199, Cl. 526-160.000.
Kraft, Kurt; Walz, Gerd; and Wirth, Thaddaus, 4,542,192, Cl. 525-438.000.
Kuch, Heinz; and Kruse, Hansjorg, 4,542,148, Cl. 514-418.000.
Mauz, Otto; Sauber, Klaus; and Noetzel, Siegfried, 4,542,069, Cl. 428-402.000.
Zimmermann, Wolfgang; and Harreus, Albrecht, 4,542,178, Cl. 524-388.000.
Hoeck, Franz. Textile-fiber mixing chamber. 4,541,144, Cl. 19-145.500.
Hoeft, Werner H., to Precision Monolithics, Inc. Digital controlled amplifier. 4,542,349, Cl. 330-279.000.
Hofer, Gerald: *See*—
Eheim, Franz; Hofer, Gerald; Eckert, Konrad; and Links, Heinz, 4,541,385, Cl. 123-446.000.
Hogan, Frank C. In-ground control unit for watering systems. 4,541,446, Cl. 137-2.000.
Hokusho, Hiroyasu; and Ebara, Yohji, to Nissan Motor Co., Ltd. Differential having reduced axial width. 4,541,306, Cl. 74-713.000.
Hol, Willem A., to Hollandse Signaalapparaten B.V. Search radar apparatus. 4,542,382, Cl. 343-7.700.
Hold, Anthony C., to British Steel Corporation. Apparatus for measuring profile thickness of strip material. 4,542,297, Cl. 250-360.100.
Holden, Scott C., to Varian Associates, Inc. Methods and apparatus for gas-assisted thermal transfer with a semiconductor wafer. 4,542,298, Cl. 250-443.100.
Holdt, Bernd-Dieter: *See*—
Vierkotter, Peter; Turk, Erich; Holdt, Bernd-Dieter; and Menke, Ronald, 4,541,551, Cl. 222-456.000.
Hollander, Brian. Delimbing shear. 4,541,177, Cl. 30-180.000.
Hollandse Signaalapparaten B.V.: *See*—
Hol, Willem A., 4,542,382, Cl. 343-7.700.
Hollmann, Siegfried; Hoch, Dieter; and Bollinger, Heribert, to Wella Aktiengesellschaft. Heat treatment apparatus for heating human hair on the head. 4,541,442, Cl. 132-9.000.
Holly, James A., to Holly Systems, Inc. Method and apparatus for forming a patty to accommodate tissue fiber flow. 4,541,143, Cl. 17-45.000.
Holly Systems, Inc.: *See*—
Holly, James A., 4,541,143, Cl. 17-45.000.
Holman, Howard E.; and Turner, Roy D., to T. J. Electronics, Inc. Aircraft grounding receptacle. 4,541,684, Cl. 339-14.00L.
Holme, Alan E. Gas pressure measuring circuit. 4,541,286, Cl. 73-755.000.
Holmes, Gordon W., to Professional Packaging Limited. Hinged coin holder. 4,541,528, Cl. 206-0.820.
Holometrics Inc.: *See*—
Layer, Howard P., 4,541,496, Cl. 177-211.000.
Holter, Walter, to Lohmann Apparatebau GmbH. Method and apparatus for automatically feeding great numbers of animals, especially pigs. 4,541,361, Cl. 119-51.00R.
Holtey, Thomas O.: *See*—
Goss, Gary J.; Moles, Robert G. H.; Hinrichs, Randall D.; and Holtey, Thomas O., 4,542,517, Cl. 375-36.000.
Homeyer, Bernhard: *See*—
Maurer, Fritz; Homeyer, Bernhard; Becker, Benedikt; and Hanssler, Gerd, 4,542,126, Cl. 514-86.000.
Homola, Andrew M.; and Sussner, Heinrich, to International Business Machines Corporation. Lubricated magnetic recording disk. 4,542,071, Cl. 428-428.000.
Hon, Edward H., to American Home Products Corporation (Del.). Monitoring of capillary blood flow. 4,541,439, Cl. 128-691.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Ishida, Yoich, 4,541,373, Cl. 123-90.550.
Itoh, Kazuhito; and Kondo, Makoto, 4,541,510, Cl. 184-6.120.
Iwai, Kazuhiro; Masuda, Tatsuo; and Takayanagi, Shinji, 4,541,502, Cl. 180-217.000.
Kawasaki, Katsuyoshi, 4,541,501, Cl. 180-215.000.
Kishi, Noriyuki; and Hirao, Yoshikazu, 4,541,386, Cl. 123-479.000.
Kishi, Noriyuki, 4,541,398, Cl. 123-571.000.
Kobayashi, Hideo; and Fukutomi, Yohji, 4,541,400, Cl. 123-589.000.
Kubo, Kanji, 4,541,641, Cl. 277-183.000.
Nishimura, Sadanori; and Kinoshita, Katsuharu, 4,541,515, Cl. 192-85.0AA.
Oe, Hidemi; and Hayashi, Kiyotaka, 4,542,506, Cl. 371-9.000.
Honda, Kazunori: *See*—
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Honeywell Inc.: *See—*
Auerweck, Ferdinand J.; Bulgarelli, Donald J.; Roller, Curtis A.; and Varrese, Francis R., 4,541,282, Cl. 73-715.000.
Comey, David M.; and Kusner, Ronald R., 4,541,730, Cl. 374-43.000.
Kozlik, Tony J.; and Spiesman, Robert L., 4,542,420, Cl. 360-42.000.
Olson, Elwyn H., 4,542,360, Cl. 335-203.000.
Rausch, Roger A., 4,542,337, Cl. 324-110.000.
Read, Edgar L., 4,542,507, Cl. 371-22.000.
Scholz, Stefan; and Tyssen, Egon, 4,542,299, Cl. 250-504.00R.
Takach, Eugene J., Jr., 4,542,372, Cl. 340-500.000.

Honeywell Information Systems Inc.: *See—*
Goss, Gary J.; Moles, Robert G. H.; Hinrichs, Randall D.; and Holtey, Thomas O., 4,542,517, Cl. 375-36.000.

Honjo, Masahiro; and Tomita, Masao, to Matsushita Electric Industrial Co., Ltd. System for eliminating vertical TV picture fluctuations appearing in monitored video signals from a VTR. 4,542,416, Cl. 360-10.300.

Honma, Katsuhiko; Tatsuno, Tsuneo; and Okada, Hiroshi, to Kabushiki Kaisha Kobe Seiko Sho. Method for producing high strength sintered silicon carbide. 4,541,975, Cl. 264-62.000.

Hopf, Reinhard, to Blaupunkt-Werke GmbH. Method and apparatus for classifying audio signals. 4,542,525, Cl. 381-56.000.

Horansky, Frank J.; and Arndt, Eric D., to Aluminum Company of America. Method of forming compressed biscuit having a beveled edge and groove for insertion of strapping means. 4,541,332, Cl. 100-3.000.

Hori, Mikio; and Fujimura, Hajime, to Wako Pure Chemical Industries, Ltd. Method for preparing 8-acylthio-1,2,3,4,5,6-hexahydro-2,6-methano-3,6(e),11(a)-trimethyl-3-benzazocines. 4,542,215, Cl. 544-126.000.

Horiguchi, Makoto: *See—*
Imazu, Katsuhiro; Matsubayashi, Hiroshi; Horiguchi, Makoto; Taira, Kazuo; Kobayashi, Seishichi; and Ueno, Hiroshi, 4,541,546, Cl. 220-456.000.

Horita, Teruyuki; and Kawamura, Keiji, to Takatori Machinery Mfg. Co., Ltd.; and Kawamura Textile Co., Ltd. Method and apparatus for automatic positioning of open ends of stockings for forming into pantyhose. 4,541,351, Cl. 112-262.200.

Horler, Hansulrich, to BBC Brown, Boveri & Company, Limited. Centrifugal lubricating oil pump of an exhaust gas turbocharger. 4,541,784, Cl. 417-407.000.

Hornak, Lawrence A.: *See—*
Beni, Gerardo; Hackwood, Susan; and Hornak, Lawrence A., 4,541,771, Cl. 414-730.000.

Hornback, Donald L., to Heath Company. Automatic antenna positioning system. 4,542,326, Cl. 318-565.000.

Hornyak, Gyula: *See—*
Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nyitrai , Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Visky nee Gombos, Zsuzsanna; and Barta nee Szalai, Gizella, 4,541,955, Cl. 260-330.900.

Horodysky, Andrew G.; and Gemmill, Robert M., Jr., to Mobil Oil Corporation. Mixed borate esters and their use as lubricant and fuel additives. 4,541,941, Cl. 252-49.600.

Horodysky, Andrew G., to Mobil Oil Corporation. Borated epoxyhydrocarbon-phenol sulfide product and lubricant and fuel compositions containing same. 4,541,942, Cl. 252-49.600.

Hoshino, Yasushi: *See—*
Momose, Haruhiko; Takahashi, Toshiaki; Hoshino, Yasushi; Matsushima, Kohji; and Yagi, Michio, 4,541,702, Cl. 354-400.000.

Hosoe, Katsuharu; Takasu, Yasuhito; and Iwata, Toshiharu, to Nippondenso Co., Ltd. Method and apparatus for ignition timing control of internal combustion engine. 4,541,382, Cl. 123-425.000.

Hosoi, Kazuo; and Ozawa, Hitoshi, to Toray Industries, Inc. Purification method of human interferon. 4,541,952, Cl. 260-112.00R.

Hosokawa, Tomoyoshi; Matsuura, Ikutoshi; Takahashi, Hidenori; Ando, Kunio; and Tamura, Gakuzo, to Chugai Seiyaku Kabushiki Kaisha. Pyridyl carbonyl ascochlorin derivatives and pharmaceutical compositions containing the same. 4,542,143, Cl. 514-356.000.

Hotger, Karl, to Gebr. Eickhoff Maschinenfabrik und Eisengiesserei m.b.H. High-pressure ball valve. 4,541,607, Cl. 251-63.400.

Hotta, Shu; Shimizu, Tokihiko; and Taguchi, Nobuyoshi, to Matsushita Electric Industrial Co., Ltd. Dye transfer sheets for heat-sensitive recording. 4,541,830, Cl. 8-471.000.

Hotten, Terrence M.: *See—*
Chakrabarti, Jiban K.; and Hotten, Terrence M., 4,542,131, Cl. 514-220.000.

Houghton, James T.: *See—*
Reynolds, Keith B.; Freston, Trevor R.; Ord, Richard N.; and Houghton, James T., 4,541,757, Cl. 407-53.000.

Hovan, Edward J., to United Technologies Corporation. Clearance control in turbine seals. 4,541,775, Cl. 415-180.000.

Howard, John R.; and Machacek, Bob, to Wilson Sporting Goods Co. Ball glove with flexible web. 4,541,126, Cl. 2-19.000.

Howard, P. Guy; and Hekker, Roeland M. T., to Optical Storage International. Friction wedge alignment system for laser diode collimator pens. 4,541,689, Cl. 350-255.000.

Howe, Dennis L.: *See—*
Lowenhaupt, E. Harris; Litz, John E.; and Howe, Dennis L., 4,541,994, Cl. 423-150.000.

Howmedica International, Inc.: *See—*
Grosse, Arsene; Harder, Hans E.; and Klietz, Jurgen, 4,541,424, Cl. 128-92.0EB.

Hozumi, Motoo; Nomura, Hiroaki; and Yoshioka, Yoshio, to Takeda Chemical Industries, Ltd. Certain heterocyclic ammonio phosphate derivatives. 4,542,219, Cl. 546-22.000.

Hsieh, Martin Y., to GTE Products Corporation. Processing silicon nitride by use of boron nitride as a barrier layer. 4,542,072, Cl. 428-446.000.

Hsu, Chao-Yang; and Ellis, Paul E., Jr., to Sun Tech, Inc. Hydroformylation catalyst and process. 4,542,119, Cl. 502-153.000.

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Hsu, Chao-Yang; Lyons, James E.; and Ellis, Paul E., Jr., to Sun Refining and Marketing Company. Platinum (O) complex-based hydroformylation catalyst. 4,542,242, Cl. 568-454.000.

Hsu, Joseph C.; Vought, Donald W.; and Walbrun, George H., to American Can Company. Preparing heat resistant heat shrinkable films. 4,541,983, Cl. 264-514.000.

HTC Corporation, The: *See—*
Spigarelli, Donald J.; Peck, Douglas J.; Hall, Walter J.; and Finney, James L., 4,541,358, Cl. 118-58.000.

Hu-Friedy Manufacturing Co.: *See—*
Jerge, Charles R.; Frankel, Bruce; and Zoll, Karl, 4,541,992, Cl. 422-300.000.

Huang, Alan; and Knauer, Scott C., to AT&T Bell Laboratories. Wideband digital switching network. 4,542,497, Cl. 370-60.000.

Huang, Victor T.; Colson, Cynthia A.; Yong, Sam; and Clemmings, John F., to Pillsbury Company, The. Stable aerated frozen dessert with multivalent cation electrolyte. 4,542,035, Cl. 426-565.000.

Hubbard, David W.: *See—*
Sachleben, Harold G.; Hubbard, David W.; Botset, Richard A.; and Hardage, Thomas B., 4,541,576, Cl. 242-18.0PW.

Hubbard, Kenneth G., to Cross Company, The. Induction heating device with electronic positioning control. 4,542,272, Cl. 219-10.570.

Hucker, David J., to Sundstrand Corporation. Inverter with bidirectional inverter for regenerative current. 4,542,451, Cl. 363-132.000.

Hudson Universal Ltd.: *See—*
Strauss, Helmut, 4,541,534, Cl. 211-13.000.

Huebner, Klaus: *See—*
Elser, Wilhelm; Huebner, Klaus; Siol, Werner; Mager, Theodor; and Wicke, Michael, 4,542,171, Cl. 523-201.000.
Fink, Herbert; Huebner, Klaus; Markert, Gerhard; and Suetterlin, Norbert, 4,542,175, Cl. 524-516.000.

Huebner, Michael B.: *See—*
Armold, Clark W.; Huebner, Michael B.; and Tobin, David, 4,541,933, Cl. 210-780.000.

Huerta, Jose L., to International Business Machines Corporation. Alignment restraint station. 4,541,623, Cl. 271-10.000.

Huerter, Ambrose F. Dethatching attachment for a power lawnmower. 4,541,230, Cl. 56-193.000.

Huffman, William F.; and Moore, Michael L., to Smithkline Beckman Corporation. Octapeptide vasopressin antagonists. 4,542,124, Cl. 514-11.000.

Hughes Aircraft Company: *See—*
Fraser, Allister F.; and Alsbach, Walter G., 4,542,257, Cl. 136-251.000.
Lucas, Charles H.; and Lewyn, Lanny L., 4,542,348, Cl. 330-253.000.
Terbrack, William H., 4,542,330, Cl. 323-222.000.

Hughes Helicopters, Inc.: *See—*
Sampatacos, Evan P., 4,541,777, Cl. 416-138.000.

Hughes Tool Company: *See—*
Leuthen, John M., 4,542,324, Cl. 318-798.000.

Hulme, Ivan E.: *See—*
Marlow, Christopher I.; Wiltshire, Anthony R.; and Hulme, Ivan E., 4,541,886, Cl. 156-230.000.

Humphrey, Stanley A. Fluid pressurized arrow shaft for archery arrows. 4,541,636, Cl. 273-416.000.

Hunsberger, Enos R.: *See—*
Heidler, Lester D.; Styer, Richard D.; and Hunsberger, Enos R., 4,541,930, Cl. 210-344.000.

Hunt, William C.: *See—*
Wilkinson, Richard A., Jr.; Hunt, William C.; and Rickert, David W., 4,542,426, Cl. 360-97.000.

Hunter Douglas, Inc.: *See—*
Anderson, Richard N., 4,541,468, Cl. 160-177.000.

Hunter, John J. Pipe coupling joint. 4,541,655, Cl. 285-55.000.

Huthmacher, Klaus: *See—*
Schalke, Peter; Manfred, Langer; and Huthmacher, Klaus, 4,542,240, Cl. 564-232.000.

Hwang, Jennie S., to SCM Corporation. Nonaqueous powdered metal paste composition. 4,541,876, Cl. 148-22.000.

Hyde, Rebecca A.; Bloom, Harold T.; and Morris, Thomas E., to Celanese Corporation. Low air pressure method and apparatus for forming filter rods. 4,541,825, Cl. 493-44.000.

Hydraulic Technology Corporation: *See—*
Sheriff, Merle M., 4,541,325, Cl. 92-52.000.

Hydril Company: *See—*
Cove, Harry R., 4,541,295, Cl. 74-142.000.

Iacconi, Marie: *See—*
Lindqvist, Sven, 4,541,793, Cl. 425-206.000.

Iato, Michel: *See—*
Castel, Yvon; and Iato, Michel, 4,541,754, Cl. 405-168.000.
Castel, Yvon; and Iato, Michel, 4,541,755, Cl. 405-195.000.

Ibrahim, Ibrahim H.; and Daly, Christopher N., to Telectronics Pty. Ltd. Use of telemetry coil to replace magnetically activated reed switch in implantable devices. 4,541,431, Cl. 128-419.0PT.

Icaro Olivieri & C. S.p.A.: *See*—
Olivieri, Oliviero, 4,541,147, Cl. 24-68.0SK.

Ichida, Junji: *See*—
Ohsugi, Katsuhisa; Ichida, Junji; and Takahashi, Eisaku, 4,542,154, Cl. 514-475.000.

Ichida, Toshio: *See*—
Ogata, Hajime; Ohashi, Yoshiharu; Tsugawa, Shunichi; Ichida, Toshio; and Irie, Toshio, 4,542,077, Cl. 428-629.000.

Ichikawa, Tetsushi: *See*—
Miyamoto, Akira; Sato, Katsuo; Ichikawa, Tetsushi; and Kurokawa, Masahiro, 4,541,958, Cl. 260-404.500.

Ichikawa, Tomohiko; Sugiyama, Takao; and Manaka, Masao, to Institute of Agricultural Machinery. Combine harvester. 4,541,441, Cl. 130-27.00T.

Ichikawa Woolen Textile Co., Ltd.: *See*—
Awano, Shunya; Koseki, Kazusuke; and Nishida, Masanori, 4,541,264, Cl. 72-257.000.

Ida, Mitsuru, to Sony Corporation. Mode changing mechanism for cassette tape player. 4,542,431, Cl. 360-137.000.

Ide, Susumu: *See*—
Irie, Hiroyuki; Ide, Susumu; Nonomura, Kinzo; Watanabe, Masanori; and Takesako, Yoshinobu, 4,542,322, Cl. 315-366.000.

Ide, Tatsumi; and Morimoto, Masayuki, to NEC Corporation. Polar relay. 4,542,359, Cl. 335-78.000.

Idea Pioneer, Inc.: *See*—
Trammell, Earl M., Jr., 4,541,311, Cl. 81-3.800.

Idemitsu Kosan Company Limited: *See*—
Hirokoh, Nobuyoshi; Kageyama, Yoichi; Nakako, Yukio; and Matsumura, Tetsuo, 4,541,914, Cl. 208-10.000.

Ideta, Yasufumi; and Fujikawa, Tadashi, to Nissan Motor Co., Ltd. Vaned hydraulic system. 4,541,791, Cl. 418-182.000.

Ihara Chemical Industry Co., Ltd.: *See*—
Ohtani, Masaaki; Harada, Takao; Oyaizu, Yoshijiro; and Kobayashi, Tatsuhiko, 4,542,070, Cl. 428-416.000.

Iida, Taketoshi: *See*—
Saito, Kazuyoshi; Iida, Taketoshi; Shirasaka, Toshio; and Takemura, Yasuhiko, 4,541,435, Cl. 128-660.000.

Iino, Shinji; Maruyama, Kensaku; Takenaga, Motoi; Muramoto, Kazuhiko; and Tsuhako, Mitsutomo, to Mitsui Toatsu Chemicals, Inc. Fine particulate crystalline aluminum orthophosphate and method for preparing same. 4,542,001, Cl. 423-311.000.

Iizuka, Hirokazu: *See*—
Chabata, Sueji; Nakano, Keiji; Ito, Kichizo; Ueda, Katsuhiko; Iizuka, Hirokazu; Miyako, Hisao; and Fukagawa, Katsumi, 4,542,064, Cl. 428-383.000.

Ikeda Bussan Company, Limited: *See*—
Ebihara, Sakae; Tanizaki, Hiroyuki; Sato, Kazuma; and Kanazawa, Yuzo, 4,541,667, Cl. 297-64.000.

Ikeda, Hiroaki, to Nippon Electric Co., Ltd. Buffer circuits for use with semiconductor memory devices. 4,542,306, Cl. 307-443.000.

Ikeda, Hiroaki, to Nippon Electric Co., Ltd. Sense amplifier with high speed, stabilized read-out. 4,542,484, Cl. 365-205.000.

Ikeda, Masaki, to Tomy Kogyo Company, Incorporated. Device for controlling wheeled vehicles. 4,541,813, Cl. 446-429.000.

Ikeda, Masami: *See*—
Tamura, Takashi; and Ikeda, Masami, 4,542,294, Cl. 250-338.000.

Ikenaga, Satoru: *See*—
Onoe, Yoshinori; Takagi, Hiroshi; Ikenaga, Satoru; Tsuchiya, Hiraku; Murakami, Shohei; and Nakao, Masakazu, 4,541,473, Cl. 164-444.000.

Imai, Hirozo: *See*—
Hamabe, Takafumi; Imai, Hirozo; and Hara, Hikoyoshi, 4,541,305, Cl. 74-690.000.

Imai, Masao: *See*—
Kanemura, Yoshinobu; Imai, Masao; and Sasagawa, Katsuyoshi, 4,542,201, Cl. 526-314.000.

Imaizumi, Mamoru; Fujiwara, Takashi; and Kobayashi, Masanari, to Brother Kogyo Kabushiki Kaisha. Motor drive control circuit to restrict motor temperature rise below an upper limit. 4,541,747, Cl. 400-144.200.

Imanaka, Yoshifumi; and Ueno, Yutaka, to Mitsubishi Denki Kabushiki Kaisha. Redundancy reduction coding method of multi-tone picture signal and apparatus therefor. 4,542,411, Cl. 358-260.000.

Imazu, Katsuhiro; Matsubayashi, Hiroshi; Horiguchi, Makoto; Taira, Kazuo; Kobayashi, Seishichi; and Ueno, Hiroshi, to Toyo Seikan Kaisha, Ltd. Draw-ironed metal vessel having circumferential side seam. 4,541,546, Cl. 220-456.000.

Imperial Chemical Industries plc: *See*—
Burgess, Paul E. A.; and Brereton, Colin, 4,541,911, Cl. 204-253.000.
Cogswell, Frederic N.; and Staniland, Philip A., 4,541,884, Cl. 156-166.000.
McClelland, Robert D.; and Renfrew, Andrew H. M., 4,542,213, Cl. 544-76.000.
Powell, Richard L., 4,541,943, Cl. 252-67.000.

Inaba, Hajimu; and Miyashita, Hideo, to Fanuc Ltd. Robot control system for presetting limit values corresponding to limits of deviation. 4,542,471, Cl. 364-513.000.

Inada, Yorihiko: *See*—
Chikugo, Kazuo; Murakami, Taku; and Inada, Yorihiko, 4,541,304, Cl. 74-579.00E.

Index Supply Company, Inc.: *See*—
Reimer, Peter, 4,541,252, Cl. 62-344.000.

Infusaid Corporation: *See*—
Prosl, Frank R.; Skakoon, James G.; Carlozzi, Gerard S.; and Infusaid Corporation, 4,541,429, Cl. 604-249.000.

Inland Steel Company: *See*—
Nickola, Richard A.; Sok, Brian A.; and Agarwal, Shashi B., 4,542,048, Cl. 427-380.000.

Inokuchi, Hiroo: *See*—
Niki, Katsumi; Inokuchi, Hiroo; Yagi, Tatsuhiko; and Nakamura, Asao, 4,541,908, Cl. 204-101.000.

Inoue-Japax Research Incorporated: *See*—
Inoue, Kiyoshi, 4,541,349, Cl. 112-221.000.

Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Sewing method and machine. 4,541,349, Cl. 112-221.000.

Inoue, Takemi: *See*—
Ono, Hiromi; and Inoue, Takemi, 4,541,808, Cl. 440-42.000.

Inoue, Yoichi, to Kabushiki Kaisha Kobe Seiko Sho. Heater for hot isostatic pressing apparatus. 4,542,513, Cl. 373-112.000.

Inoue, Yoshihisa: *See*—
Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; Inoue, Yoshihisa; Naito, Youichiro; and Suyama, Tadakazu, 4,542,147, Cl. 514-411.000.

Institut de Recherches de la Siderurgie Francaise: *See*—
Riboud, Paul-Victor; and Gatellier, Christian, 4,541,863, Cl. 75-24.000.

Institut Francais du Petrole: *See*—
Vandecasteele, Jean-Paul; Ballerini, Daniel; Lemal, Jeanine; and Le Penru, Yann, 4,542,098, Cl. 435-190.000.

Institut Merieux: *See*—
Trepo, Christian, 4,542,016, Cl. 424-86.000.

Institut Pasteur: *See*—
Fauve, Robert M., 4,542,212, Cl. 536-117.000.

Institute of Agricultural Machinery: *See*—
Ichikawa, Tomohiko; Sugiyama, Takao; and Manaka, Masao, 4,541,441, Cl. 130-27.00T.

International Business Machines Corporation: *See*—
Bartush, Thomas A., 4,541,169, Cl. 29-591.000.
Bobart, Kevin L.; Samson, Robert S.; and Shakib, Iraj D., 4,541,746, Cl. 400-144.200.
Buchanan, Gregory S.; and DeFazio, John J., 4,542,509, Cl. 371-61.000.
Chakravarti, Satya N.; Garbarino, Paul L.; and Miller, Donald A., 4,542,340, Cl. 324-158.00R.
Cuomo, Jerome J.; and Kaufman, Harold R., 4,541,890, Cl. 156-345.000.
Ellis, Wayne F.; Griffin, William R.; and Troutman, Ronald R., 4,542,310, Cl. 307-578.000.
Galie, John R.; Goth, George R.; Hansen, Thomas A.; and Villetto, Robert T., Jr., 4,541,168, Cl. 29-579.000.
Hagen, Mark D.; Mendel, Peter J.; and Regehr, John L., 4,542,377, Cl. 340-727.000.
Hausler, Gerd; Jarisch, Walter; and Makosch, Gunter, 4,541,720, Cl. 356-345.000.
Hilpert, Fritz; Kohm, Erich; Rudolph, Volker; and Wohnsdorf, Manfred, 4,542,393, Cl. 346-163.000.
Homola, Andrew M.; and Sussner, Heinrich, 4,542,071, Cl. 428-428.000.
Huerta, Jose L., 4,541,623, Cl. 271-10.000.
Klein, Wilfried; Klink, Erich; Najmann, Knut; and Wernicke, Friedrich, 4,542,309, Cl. 307-513.000.
Lange, Russell C., 4,542,481, Cl. 365-149.000.
Patrick, Michael J.; and Snider, David M., 4,542,453, Cl. 364-200.000.

International Flavors & Fragrances Inc.: *See*—
Hall, John B.; and Sprecker, Mark A., 4,541,951, Cl. 252-522.00R.
Rutherford, Howard J.; and Withycombe, Donald A., 4,542,162, Cl. 521-79.000.
Sprecker, Mark A.; Schreiber, William L.; Fujioka, Futoshi; Boden, Richard M.; Vock, Manfred H.; Whelan, Patrick; and Hanna, Marie R., 4,541,949, Cl. 252-522.00R.
Van Loveren, Augustinus G.; Hanna, Marie R.; Luccarelli, Domenick, Jr.; Bowen, David R.; Vock, Manfred H.; and Wiegers, Wilhelmus J., 4,541,950, Cl. 252-522.00R.

International Housing Limited: *See*—
Garrett, Dennis L., 4,541,211, Cl. 52-98.000.

International Standard Electric Corporation: *See*—
Verfaillie, Guido A. M.; and Breynaert, Dirk, 4,542,347, Cl. 329-124.000.

International Telecommunications Satellite Organization: *See*—
Fraser, Allister F.; and Alsbach, Walter G., 4,542,257, Cl. 136-251.000.

Interox Chemicals Limited: *See*—
Sanderson, William R., 4,541,944, Cl. 252-95.000.

Iolab Corp.: *See*—
Akhavi, David S., 4,541,206, Cl. 51-217.00L.

Ion Systems, Inc.: *See*—
Gehlke, Scott J. S.; Yost, Michael G.; and Steinman, Arnold J., 4,542,434, Cl. 361-231.000.

Irie, Hiroyuki; Ide, Susumu; Nonomura, Kinzo; Watanabe, Masanori; and Takesako, Yoshinobu, to Matsushita Electric Industrial Co., Ltd. Picture image display apparatus. 4,542,322, Cl. 315-366.000.

Irie, Toshio: *See*—
Kyono, Kazuaki; Kurokawa, Shigeo; Kimura, Hajime; Irie, Toshio; Yoshihara, Takahisa; and Matsuda, Akira, 4,541,903, Cl. 204-28.000.
Ogata, Hajime; Ohashi, Yoshiharu; Tsugawa, Shunichi; Ichida, Toshio; and Irie, Toshio, 4,542,077, Cl. 428-629.000.

Irvine, Robert: *See*—
Govan, Edward; and Irvine, Robert, 4,541,764, Cl. 414-52.000.

Ishibashi, Takashi: *See*—
Saito, Toranosuke; Kitani, Masakatu; Ishibashi, Takashi; Arai, Naoto; Murakami, Takeshi; and Suzuki, Toshitake, 4,542,395, Cl. 346-216.000.
Samejima, Masayoshi; Hirata, Goichi; and Ishibashi, Takashi, 4,542,042, Cl. 427-213.360.

Ishida, Yoich, to Honda Giken Kogyo Kabushiki Kaisha. Oil lash adjuster. 4,541,373, Cl. 123-90.550.

Ishihara, Mitsugu, to Sony Corporation. Tape speed control apparatus. 4,542,424, Cl. 360-73.000.

Ishihara, Noboru: *See*—
Akazawa, Yukio; Ishihara, Noboru; and Ohara, Mamoru, 4,542,350, Cl. 330-293.000.

Ishikawa, Nobuo, to Daikin Kogyo Co., Ltd. Optically active substance. 4,542,238, Cl. 562-586.000.

Ishikawa, Takatoshi: *See*—
Sasaki, Noboru; Ishikawa, Takatoshi; and Adachi, Keiichi, 4,542,091, Cl. 430-380.000.

Ishizaka, Hideo, to Terumo Kabushiki Kaisha. Electronic clinical thermometer, and method of measuring body temperature. 4,541,734, Cl. 374-169.000.

Isover Saint-Gobain: *See*—
Maillard, Alain; and Pichon, Michel, 4,541,856, Cl. 65-29.000.

Italkali Societa Italiana Sali Alcalini S.p.A.: *See*—
Vitellaro, Antonio; and Sanfilippo, Giovanni, 4,541,832, Cl. 23-303.000.

Itamoto, Shigeru; Yasuda, Kenji; and Mikami, Senji, to Fuji Photo Optical Co., Ltd. Attraction holding device. 4,541,717, Cl. 356-244.000.

Ito, Kichizo: *See*—
Chabata, Sueji; Nakano, Keiji; Ito, Kichizo; Ueda, Katsuhiko; Iizuka, Hirokazu; Miyako, Hisao; and Fukagawa, Katsumi, 4,542,064, Cl. 428-383.000.

Ito, Masahiko; and Ogihara, Toru, to Yoshida Kogyo K.K. Hooked fabric fastener tape. 4,541,154, Cl. 24-442.000.

Ito, Nobuo: *See*—
Takeuchi, Koji; Abe, Masahiro; Ito, Nobuo; and Hirai, Kiyomiki, 4,542,202, Cl. 528-96.000.

Ito, Tetsuo: *See*—
Kamimura, Hiroshi; and Ito, Tetsuo, 4,542,479, Cl. 364-900.000.

Itoh, Kazuhito; and Kondo, Makoto, to Honda Giken Kogyo Kabushiki Kaisha. Shift fork lubricating system for transmission. 4,541,510, Cl. 184-6.120.

ITT Corporation: *See*—
Hansen, William D.; and Mix, Raymond F., 4,541,676, Cl. 339-17.0CF.

Iversen, Alfred A.; and Eastman, William J., to PMT, Inc. Halo fixation system. 4,541,421, Cl. 128-87.00B.

Iwahashi, Hiroshi; and Asano, Masamichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor integrated circuit. 4,542,485, Cl. 365-230.000.

Iwai, Kazuhiro; Masuda, Tatsuo; and Takayanagi, Shinji, to Honda Giken Kogyo Kabushiki Kaisha. Rear axle supporting structure in three-wheeled motor vehicle. 4,541,502, Cl. 180-217.000.

Iwakura, Mitsuo; Takahashi, Toru; and Ono, Kensaku, to Iwatsu Electric Co., Ltd. Cathode ray oscilloscope with a waveform storage capability. 4,542,339, Cl. 324-121.00R.

Iwata, Michitaka: *See*—
Tanji, Hiroshi; Iwata, Michitaka; and Sato, Hideo, 4,542,063, Cl. 428-364.000.

Iwata, Toshiharu: *See*—
Hosoe, Katsuharu; Takasu, Yasuhito; and Iwata, Toshiharu, 4,541,382, Cl. 123-425.000.

Iwatsu Electric Co., Ltd.: *See*—
Iwakura, Mitsuo; Takahashi, Toru; and Ono, Kensaku, 4,542,339, Cl. 324-121.00R.

Izumi, Misao: *See*—
Yamamoto, Osamu; Suda, Hideaki; Nishiuchi, Kihachiro; Izumi, Misao; and Ejima, Noriyoshi, 4,542,067, Cl. 428-237.000.

J. A. Preston Corporation: *See*—
Kirby, John R., 4,541,418, Cl. 128-24.100.

J. D. Calato Manufacturing Co., Inc.: *See*—
Calato, Joseph S., 4,541,322, Cl. 84-422.00S.

J. I. Case Company: *See*—
Bellah, Glen R., 4,541,307, Cl. 74-850.000.

Jack, Douglas S.; and Garner, James W., to Phillips Petroleum Company. Continuous overbasing of petroleum sulfonate with water removal and methanol addition between reaction stages. 4,541,938, Cl. 252-33.000.

Jack, Douglas S., to Phillips Petroleum Company. Continuous process for highly overbased petroleum sulfonates using a series of stirred tank reactors. 4,541,939, Cl. 252-33.000.

Jackson, Ivan; Ward, Michael D.; and Ridgway, Frank, to E. R. Squibb & Sons, Inc. Long-lasting adhesive antifungal suppositories. 4,542,020, Cl. 514-31.000.

Jackson, Robert L.: *See*—
Hall, Dale R.; and Jackson, Robert L., 4,542,170, Cl. 523-179.000.

Jacobson, Peter E.: *See*—
Allen, Terry S.; Smith, Dennis W.; and Jacobson, Peter E., 4,541,739, Cl. 384-470.000.

Jaffe, Edward E., to Ciba-Ceigy Corporation. Preparation of pigmentary grade pigment from crude pigment. 4,541,872, Cl. 106-309.000.

James Howden & Company Limited: *See*—
White, William W., 4,541,737, Cl. 384-406.000.

Janda, Jiri, to TESLA, koncernoxy podnik. Arrangement for fastening a phonograph stylus holder to the tone arm. 4,542,494, Cl. 369-256.000.

Janome Sewing Machine Industry Co., Ltd.: *See*—
Takenoya, Hideaki; and Honda, Kazunori, 4,541,354, Cl. 112-314.000.

Janossy, Lorant: *See*—
Szejtli, Jozsef; Liptak, Andras; Nanasi, Pal; Fugedi, Peter; Jodal, Ildiko; Kandra, Lili; and Janossy, Lorant, 4,542,211, Cl. 536-103.000.

Janssen, Harry R.: *See*—
Graf, Harlan G.; Janssen, Harry R.; Edwards, Don L.; and Duren, Don D., 4,541,453, Cl. 137-315.000.

Janssen Pharmaceutica N.V.: *See*—
Van Gestel, Josef; Duytschaever, Benedikt; Muntwyler, Rene ; and Scharer, Max, 4,542,146, Cl. 514-383.000.

Janusch, Alois, to Voest-Alpine Aktiengesellschaft. Device for drying of solid materials. 4,541,929, Cl. 210-217.000.

Jarisch, Walter: *See*—
Hausler, Gerd; Jarisch, Walter; and Makosch, Gunter, 4,541,720, Cl. 356-345.000.

Jaroch, Johannes: *See*—
Grumpelt, Heinrich; and Jaroch, Johannes, 4,541,345, Cl. 110-229.000.

Jarrett, Robert B.; and Neidorff, Robert A., to Motorola, Inc. Comparator circuit. 4,542,303, Cl. 307-350.000.

Jarvis, George A.; and Sivertson, Larry M., to Litton Systems, Inc. Browning heater for a microwave oven. 4,542,268, Cl. 219-10.55B.

Jatana, Subhash C., to Columbia Gas System Service Corporation. Apparatus and method for burning a combustible gas, and a heat exchanger for use in this apparatus. 4,541,410, Cl. 126-362.000.

Jaxa-Chamiec, Albert A.: *See*—
Campbell, Simon F.; Jaxa-Chamiec, Albert A.; and Roberts, David A., 4,542,132, Cl. 514-222.000.

Jean-Claude, Billy. Multiplexing and demultiplexing system with justification. 4,542,500, Cl. 370-102.000.

Jebadabe International, Inc.: *See*—
Moreland, Gerald W., 4,541,780, Cl. 417-176.000.

Jenks, Earl D., to JENKSystems, Inc. Contour line scanner. 4,541,722, Cl. 356-376.000.

JENKSystems, Inc.: *See*—
Jenks, Earl D., 4,541,722, Cl. 356-376.000.

Jennings, William S.; and Fegraus, Clark E., to Clayton Manufacturing Company. Method and apparatus for supplying feedwater to a forced flow boiler. 4,541,365, Cl. 122-451.00R.

Jensen, Jens C., to Sophus Berendsen Marine A/S. Device for selectively locking and releasing a rope member extending therethrough. 4,541,149, Cl. 24-134.00R.

Jerge, Charles R.; Frankel, Bruce; and Zoll, Karl, to Hu-Friedy Manufacturing Co. Apparatus for organizing, sterilizing, and maintaining medical/dental instruments. 4,541,992, Cl. 422-300.000.

Jershin, James T. Fishing rod holder signalling device. 4,541,196, Cl. 43-17.000.

Jessel, Alfred J., to Chevron Research Company. Method and apparatus for minimum knock operation of an internal combustion engine on low knock-rated fuel. 4,541,383, Cl. 123-435.000.

Jeuch, Pierre, to Commissariat a l'Energie Atomique. Process for the positioning of an interconnection line on an electrical contact hole of an integrated circuit. 4,541,892, Cl. 156-643.000.

Jeumont-Schneider Corporation: *See*—
Drevet, Michel; and Trouillet, Jean, 4,541,773, Cl. 415-111.000.

Jewish Employment and Vocational Service: *See*—
Zimmerman, Bonnie L.; Gannaway, Thomas W.; Resinski, Lawrence J.; and DeVita, Philip S., 4,541,806, Cl. 434-258.000.

JHD Holding, Ltd.: *See*—
Dirks, Johann H., 4,541,630, Cl. 273-144.00B.

Jidosha Denki Kogyo Kabushiki Kaisha: *See*—
Kobayashi, Kyoji; Kato, Masaru; and Fujisawa, Koichi, 4,542,325, Cl. 318-483.000.

Jinnai, Koichiro; and Ebi, Yutaka, to Ricoh Company, Ltd. Ink jet printing apparatus. 4,542,385, Cl. 346-75.000.

Jira, Reinhard: *See*—
Eck, Herbert; and Jira, Reinhard, 4,542,184, Cl. 524-827.000.

Jochum, Peter; and Gasser, Oswald, to ESPE Fabrik Pharmazeutischer Praparate GmbH. Dental cement containing polyvinyl butyral as an additive. 4,542,172, Cl. 523-116.000.

Jodal, Ildiko: *See*—
Szejtli, Jozsef; Liptak, Andras; Nanasi, Pal; Fugedi, Peter; Jodal, Ildiko; Kandra, Lili; and Janossy, Lorant, 4,542,211, Cl. 536-103.000.

Johansson, Jan H.: *See*—
Schmidt, Henning M.; Malmkvist, Hans G.; Aksberg, Arvi J.; and Johansson, Jan H., 4,542,264, Cl. 179-111.00E.

John D. Brush & Co., Inc.: *See*—
Beattie, Patrick J.; and Chase, David O., 4,541,545, Cl. 220-431.000.

Johns Hopkins University, The: *See*—
Parker, John G.; and Standbro, William D., 4,541,438, Cl. 128-664.000.

Johnsen & Jorgensen (Plastics) Ltd.: *See*—
Davis, Eugene E.; and Searle, Richard J., 4,541,536, Cl. 215-252.000.

Johnsey, Walter F.: *See*—
Drummond, Donald D.; Johnsey, Walter F.; and Wood, Roy W., 4,541,494, Cl. 175-228.000.

Johnson, Brian C.: *See*—
Cooper, Jeffrey L.; and Johnson, Brian C., 4,542,407, Cl. 358-120.000.

Johnson Service Company: *See*—
Brzezinski, Donald E.; and Kadue, Christy C., 4,541,328, Cl. 98-121.200.
Carusillo, Steven J., 4,542,436, Cl. 361-283.000.

Johnsrud, David R.: *See*—
Lamparter, Richard A.; Barna, Bruce A.; and Johnsrud, David R., 4,542,239, Cl. 562-487.000.

Johnston, James J., to Brand-Rex Company. Electrical connector assembly. 4,541,680, Cl. 339-98.000.

Johnston, Russell A., to Camco, Incorporated. Offset open bore side-pocket mandrel. 4,541,482, Cl. 166-117.500.

Joly, Arthur, to S.A. Joy & Cie. Method of wrapping a spool with metallic ribbon. 4,541,222, Cl. 53-399.000.

Jonasson, Kjell, to AB Volvo. Safety belt arrangement in motor vehicles. 4,541,654, Cl. 280-801.000.

Jones, David A.; and Maust, Daniel A., to Drackett Company, The. Broom shroud. 4,541,139, Cl. 15-171.000.

Jones, Edward M., to Dow Chemical Company, The. Exchanging fluorine for chlorine in a chlorinated pyridine with an alkali metal fluoride. 4,542,221, Cl. 546-345.000.

Jones, Loyd W.; and Alkire, John D., to Standard Oil Company. Corrosion inhibitor for amine gas sweetening systems. 4,541,946, Cl. 252-189.000.

Jones, Tristan; and Surtees, Leo. Multihull vessel with capsize prevention means. 4,541,356, Cl. 114-61.000.

Josef Gartner & Co.: *See*—
Gartner, Fritz, 4,541,200, Cl. 49-192.000.

Joulain, Daniel R., to P. Robertet & Cie [Societe Anomyme]. Perfumes containing polyalkyl substituted indan-1-ones and process for preparing the compounds. 4,541,948, Cl. 252-522.00R.

Jourdain, Gerard E. A.; and Soligny, Marcel R., to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation. Variable area nozzle vane. 4,541,567, Cl. 239-265.370.

Joy Manufacture Company: *See*—
Bigbie, Burke N.; and Boyd, Gilbert R., 4,541,490, Cl. 166-379.000.

Justus, Paul D.: *See*—
Walker, William B.; Justus, Paul D.; and Bloomfield, Michael K., 4,541,768, Cl. 414-535.000.

KK Automation Klaus Th. Kramer GmbH & Co.: *See*—
Tischler, Bernd; and Euerle, Kurt, 4,541,762, Cl. 414-32.000.

Kabushiki Kaisha Kobe Seiko Sho: *See*—
Honma, Katsuhiko; Tatsuno, Tsuneo; and Okada, Hiroshi, 4,541,975, Cl. 264-62.000.
Inoue, Yoichi, 4,542,513, Cl. 373-112.000.
Onoe, Yoshinori; Takagi, Hiroshi; Ikenaga, Satoru; Tsuchiya, Hiraku; Murakami, Shohei; and Nakao, Masakazu, 4,541,473, Cl. 164-444.000.
Tamura, Setsuo; Motonaga, Kenjiro; Mizokawa, Takumi; Tanaka, Kozo; Kawashima, Katsumi; Hiwatashi, Takaaki; and Sugahara, Takayuki, 4,541,572, Cl. 241-31.000.

Kabushiki Kaisha Kobe Seikosho: *See*—
Hirokoh, Nobuyoshi; Kageyama, Yoichi; Nakako, Yukio; and Matsumura, Tetsuo, 4,541,914, Cl. 208-10.000.

Kabushiki Kaisha Komatsu Seisakusho: *See*—
Chikugo, Kazuo; Murakami, Taku; and Inada, Yorihiko, 4,541,304, Cl. 74-579.00E.
Sato, Fumihide; and Ono, Toyoichi, 4,541,393, Cl. 123-502.000.

Kabushiki Kaisha Suwa Seikosha: *See*—
Orii, Toshio, 4,542,480, Cl. 364-900.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Suzuki, Osamu; Morita, Takayuki; Muramatsu, Shigeru; and Asai, Isao, 4,541,577, Cl. 242-35.50A.

Kabushiki Kaisha Universal: *See*—
Okada, Tomoo, 4,541,444, Cl. 133-4.00A.

Kabushiki Kaisha Yakult Honsha: *See*—
Sakurai, Toshizo; and Kosaka, Toshiyuki, 4,542,099, Cl. 435-199.000.

Kadue, Christy C.: *See*—
Brzezinski, Donald E.; and Kadue, Christy C., 4,541,328, Cl. 98-121.200.

Kageyama, Minoru; Hirose, Takeo; Matsui, Tadao; Ogino, Hiroshi; Yoshida, Shiro; and Suzuki, Takayuki, to Suzuki Motor Co., Ltd. Two cycle engine. 4,541,371, Cl. 123-65.0PE.

Kageyama, Yoichi: *See*—
Hirokoh, Nobuyoshi; Kageyama, Yoichi; Nakako, Yukio; and Matsumura, Tetsuo, 4,541,914, Cl. 208-10.000.

Kagohashi, Yasuyoshi: *See*—
Sugai, Manabu; Kagohashi, Yasuyoshi; and Aoki, Hiroshi, 4,541,589, Cl. 242-200.000.

Kaku, Shinkyo: *See*—
Rallapalli, Krishna; and Kaku, Shinkyo, 4,542,413, Cl. 358-261.000.

Kalkipsakis, Charalambos G.: *See*—
Thomas, Geoffrey; and Kalkipsakis, Charalambos G., 4,542,530, Cl. 383-66.000.

Kallfass, Traugott: *See*—
Luder, Ernst; and Kallfass, Traugott, 4,541,904, Cl. 204-38.300.

Kameo, Kazuya: *See*—
Tomisawa, Kazuyuki; Kameo, Kazuya; Matsunaga, Toru; Saito, Shiuji; Nakashima, Yoshimoto; and Sata, Kaoru, 4,541,959, Cl. 260-455.00R.

Kamimura, Hiroshi; and Ito, Tetsuo, to Hitachi, Ltd. Distributed control system. 4,542,479, Cl. 364-900.000.

Kamimura, Mamoru: *See*—
Nakada, Takao; Kamimura, Mamoru; and Ashizawa, Toranosuke, 4,542,110, Cl. 501-103.000.

Kaminsky, Walter; Hahnsen, Heinrich; Kulper, Klaus; and Woldt, Rudiger, to Hoechst Aktiengesellschaft. Process for the preparation of polyolefins. 4,542,199, Cl. 526-160.000.

Kampschreur, Rutgerus J. M., to Oce-Nederland B.V. Image transfer apparatus. 4,541,709, Cl. 355-3.0TR.

Kanakkanatt, Sebastian V.: *See*—
Cardarelli, Nathan F.; and Kanakkanatt, Sebastian V., 4,541,956, Cl. 260-397.100.

Kanamaru, Hisanobu; Tohkairin, Akira; and Kurosawa, Takuzo, to Hitachi, Ltd.; and Kawamura Co., Ltd. Inside chuck device for machine tools. 4,541,315, Cl. 82-40.00R.

Kanamaru, Makoto: *See*—
Fukuta, Kinsho; and Kanamaru, Makoto, 4,541,672, Cl. 297-367.000.

Kanao, Hidekazu: *See*—
Kitajima, Hiroyuki; Ohmachi, Kazuhiko; Doki, Mitsuru; Kazama, Junichi; and Kanao, Hidekazu, 4,542,458, Cl. 364-200.000.

Kanaya, Takakuni; Kudo, Isao; and Yokota, Seiji, to Toyota Jidosha Kabushiki Kaisha. Steering shaft assembly for automotive vehicles. 4,541,299, Cl. 74-493.000.

Kanazawa, Yuzo: *See*—
Ebihara, Sakae; Tanizaki, Hiroyuki; Sato, Kazuma; and Kanazawa, Yuzo, 4,541,667, Cl. 297-64.000.

Kandel, Gerald J.: *See*—
Gretz, Charles; and Kandel, Gerald J., 4,541,540, Cl. 220-20.000.

Kandra, Lili: *See*—
Szejtli, Jozsef; Liptak, Andras; Nanasi, Pal; Fugedi, Peter; Jodal, Ildiko; Kandra, Lili; and Janossy, Lorant, 4,542,211, Cl. 536-103.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Shibahara, Hiroshi; and Tachibana, Hiromitsu, 4,542,204, Cl. 528-140.000.

Kaneko, Ichiro: *See*—
Shimizu, Toshihide; Kaneko, Ichiro; and Shimakura, Yoshiteru, 4,542,195, Cl. 526-62.000.

Kanemura, Yoshinobu; Imai, Masao; and Sasagawa, Katsuyoshi, to Mitsui Toatsu Chemicals Incorporated. Resin for high-refractivity lenses and lenses made of same resin. 4,542,201, Cl. 526-314.000.

Kanzai Paper Manufacturing Company Ltd.: *See*—
Saito, Toranosuke; Kitani, Masakatu; Ishibashi, Takashi; Arai, Naoto; Murakami, Takeshi; and Suzuki, Toshitake, 4,542,395, Cl. 346-216.000.

Kao, Wen-Hong: *See*—
Kuwana, Theodore; and Kao, Wen-Hong, 4,541,905, Cl. 204-38.700.

Kaplan, Morris; and Lindley, William A., to Nalco Chemical Company. Use of phosphate and thiophosphate esters neutralized with water soluble amines as ethylene furnace anti-coking antifoulants. 4,542,253, Cl. 585-650.000.

Kapphahn, John M. Sickle guard aligning tool. 4,541,267, Cl. 72-458.000.

Karato, Kenji: *See*—
Nakamura, Masao; and Karato, Kenji, 4,541,467, Cl. 152-548.000.

Karl Lumberg GmbH & Co.: *See*—
Fiedler, Karl E.; and Fuchs, Helmut, 4,541,679, Cl. 339-97.00P.

Karlsson, Mats: *See*—
Eriksson, Jan Erik; Karlsson, Mats; Kollberg, Sten; and Mansson, Bengt, 4,541,472, Cl. 164-504.000.

Karna , Anssi; and Liimatainen, Heikki, to Oy Tampella AB. Method of controlling a grinding process in a pocket grinder. 4,541,571, Cl. 241-28.000.

Karpov, Victor. Air mattress. 4,541,135, Cl. 5-455.000.

Karst, Daniel; Strege, Gary; and Larsen, E. Richard, to Maysteel Corp. Backshelf compensating exhaust hood apparatus. 4,541,409, Cl. 126-299.00D.

Kaschke, Werner: *See*—
Schwab, Heinrich; and Kaschke, Werner, 4,541,986, Cl. 422-5.000.

Kasmader, Richard: *See*—
Schubert, Hermann; Thone, Heinrich; and Kasmader, Richard, 4,541,478, Cl. 164-440.000.

Kast, Michael A.: *See*—
Bagshaw, David P.; Kast, Michael A.; and Whitehouse, Harry T., 4,541,412, Cl. 126-419.000.

Kasuga, Masao, to Victor Company of Japan, Ltd. Digital-to-analog converting device. 4,542,369, Cl. 340-347.0DA.

Kataoka, Hiroyuki; Yamada, Masanori; and Suzuki, Nobuyuki, to Canon Kabushiki Kaisha. Electronic flash photographic device. 4,541,703, Cl. 354-415.000.

Kataoka, Hiroyuki: *See*—
Suganuma, Saburo; Kataoka, Hiroyuki; and Arai, Yoshio, 4,542,378, Cl. 340-734.000.

Kato, Junichi; Yokotani, Yoichirou; Nishida, Masamitsu; and Ouchi, Hiromu, to Matsushita Electric Industrial Co., Ltd. Dielectric ceramic compositions. 4,542,107, Cl. 501-134.000.

Kato, Kazuaki; and Nishi, Yuzo, to NKG Insulators, Ltd.; and Takamatsu Electric Works, Ltd. Open fuse cutout. 4,542,363, Cl. 337-31.000.

Kato, Masaru: *See*—
Kobayashi, Kyoji; Kato, Masaru; and Fujisawa, Koichi, 4,542,325, Cl. 318-483.000.

Kato, Yutaka: *See*—
Matsunaga, Atsushi; Kusayanagi, Sampo; Takano, Masamitu; and Kato, Yutaka, 4,542,246, Cl. 585-6.600.

Katsumata, Fuyuki, to Tomy Kogyo Company, Incorporated. Illuminating toy utilizing captive light conducting elements. 4,541,812, Cl. 446-91.000.

Katsumata, Tsutomu; and Dozono, Tetsuro, to Asahi Kasei Kasyo Kabushiki Kaisha. Production of methacrylonitrile. 4,541,964, Cl. 260-465.300.

Katsura, Tadashi: *See*—
Minai, Masayoshi; Katsura, Tadashi; Hamada, Kazuhiko; and Suzukamo, Gohfu, 4,542,235, Cl. 562-401.000.

Kaufman, Harold R.: *See*—
Cuomo, Jerome J.; and Kaufman, Harold R., 4,541,890, Cl. 156-345.000.

Kautz, Rudolf: *See*—
Breitscheidel, Hans-Ulrich; Anshen, Walter H.; and Kautz, Rudolf, 4,542,057, Cl. 428-126.000.

Kavonic, Clifford M.: *See*—
Norton, John H. R.; Rebello, Peter R.; Kavonic, Clifford M.; and Stiff, Anthony J., 4,541,835, Cl. 44-53.000.
Norton, John H. R.; Rebello, Peter R.; Kavonic, Clifford M.; and Stiff, Anthony J., 4,541,837, Cl. 44-53.000.

Kawabata, Toshiaki: *See*—
Yanadori, Michio; and Kawabata, Toshiaki, 4,541,261, Cl. 72-112.000.

Kawaguchi, Hideo; and Nomura, Etuzo, to Brother Kogyo Kabushiki Kaisha. Automatic work guiding apparatus for sewing machines. 4,541,347, Cl. 112-121.110.

Kawamura Co., Ltd.: *See*—
Kanamaru, Hisanobu; Tohkairin, Akira; and Kurosawa, Takuzo, 4,541,315, Cl. 82-40.00R.

Kawamura, Keiji: *See*—
Horita, Teruyuki; and Kawamura, Keiji, 4,541,351, Cl. 112-262.200.

Kawamura, Mitsuhiro, to Mitsubishi Denki Kabushiki Kaisha. Linear motor. 4,542,312, Cl. 310-13.000.

Kawamura Textile Co., Ltd.: *See*—
Horita, Teruyuki; and Kawamura, Keiji, 4,541,351, Cl. 112-262.200.

Kawarabashi, Tsukasa; and Takahashi, Shinji, to Murata Kikai Kabushiki Kaisha. Doffing apparatus in automatic winder. 4,541,578, Cl. 242-35.50A.

Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Ono, Hiromi; and Inoue, Takemi, 4,541,808, Cl. 440-42.000.

Kawasaki, Katsuyoshi, to Honda Giken Kogyo Kabushiki Kaisha. Articulated tricycle. 4,541,501, Cl. 180-215.000.

Kawasaki, Keiichi: *See*—
Yuguchi, Naoki; and Kawasaki, Keiichi, 4,541,625, Cl. 271-42.000.

Kawasaki Steel Corporation: *See*—
Kyono, Kazuaki; Kurokawa, Shigeo; Kimura, Hajime; Irie, Toshio; Yoshihara, Takahisa; and Matsuda, Akira, 4,541,903, Cl. 204-28.000.
Ogata, Hajime; Ohashi, Yoshiharu; Tsugawa, Shunichi; Ichida, Toshio; and Irie, Toshio, 4,542,077, Cl. 428-629.000.

Kawashima, Katsumi: *See*—
Tamura, Setsuo; Motonaga, Kenjiro; Mizokawa, Takumi; Tanaka, Kozo; Kawashima, Katsumi; Hiwatashi, Takaaki; and Sugahara, Takayuki, 4,541,572, Cl. 241-31.000.

Kay, Edward L.; and Gutierrez, Richard, to Firestone Tire & Rubber Company, The. Rubber additives derived from guayule resins and compositions containing them. 4,542,191, Cl. 525-383.000.

Kazama, Junichi: *See*—
Kitajima, Hiroyuki; Ohmachi, Kazuhiko; Doki, Mitsuru; Kazama, Junichi; and Kanao, Hidekazu, 4,542,458, Cl. 364-200.000.

Kazuhisa Tabuchi: *See*—
Tabuchi, Akiko, 4,541,622, Cl. 269-325.000.

Keiper Recaro GmbH & Co.: *See*—
Goldner, Walther, 4,541,669, Cl. 297-284.000.

Keith, Alec D., to Key Pharmaceuticals, Inc. Trinitroglycerol sustained release vehicles and preparation therefrom. 4,542,013, Cl. 424-28.000.

Kelly, Martin J., Jr.: *See*—
Crooks, Horatio N.; and Kelly, Martin J., Jr., 4,541,716, Cl. 356-237.000.

Kendall, George A.: *See*—
Laverick, William J.; and Kendall, George A., 4,541,338, Cl. 101-316.000.

Kenny, Garry R.; Sommer, Edward J., Jr.; and Shepard, Mark E., to Magnetic Separation Systems, Inc. Recovery of metallic concentrate from solid waste. 4,541,530, Cl. 209-571.000.

Kernforschungszentrum Karlsruhe GmbH: *See*—
Becker, Erwin; Bier, Wilhelm; Ehrfeld, Wolfgang; and Munchmeyer, Dietrich, 4,541,977, Cl. 264-102.000.

Kerzner, Mark G., to Dresser Industries, Inc. Log correlation method and apparatus. 4,541,275, Cl. 73-152.000.

Ketterer, Stanley J., to Singer Company, The. Thread retaining cloth strip for lockstitch sewing machines. 4,541,350, Cl. 112-254.000.

Kewpie Kabushiki Kaisha: *See*—
Fujimura, Gen, 4,541,330, Cl. 99-500.000.

Key Pharmaceuticals, Inc.: *See*—
Keith, Alec D., 4,542,013, Cl. 424-28.000.

Keystone International, Inc.: *See*—
Yohner, Paul A., 4,541,612, Cl. 251-308.000.

Kieffer Paper Mills, Inc.: *See*—
Hickey, David J.; and Devery, Kieran, 4,541,359, Cl. 119-1.000.

Kiersarsky, Albert S.; Sauer, Earl S.; Vesperman, William C.; and Wilson, Max K., to AT&T Technologies, Inc. Methods of producing plastic-coated metallic members. 4,541,980, Cl. 264-174.000.

Kijima, Shoichiro; and Ohkawara, Masaaki, to Ohkawara Kakohki Kabushiki Kaisha. Atomizing disc for a centrifugal atomizer. 4,541,566, Cl. 239-224.000.

Kikuchi, Kiyoshi: *See*—
Noyori, Masato; Saitou, Hiroyoshi; Sato, Masamitsu; and Kikuchi, Kiyoshi, 4,542,477, Cl. 364-900.000.

Kim, Gwan; Pereira, Carmo J.; Hegedus, Louis; and Maselli, James M., to W. R. Grace & Co. Process for utilizing doubly promoted catalyst with high geometric surface area. 4,541,995, Cl. 423-213.500.

Kimura, Hajime: *See*—
Kyono, Kazuaki; Kurokawa, Shigeo; Kimura, Hajime; Irie, Toshio; Yoshihara, Takahisa; and Matsuda, Akira, 4,541,903, Cl. 204-28.000.

Kimura, Kenji, to Olympus Optical Co., Ltd. Tracking error detecting device for disc-type video signal recorder/reproducer. 4,542,415, Cl. 358-342.000.

Kin, Lai: *See*—
Thaler, Arnold; and Kin, Lai, 4,542,284, Cl. 219-506.000.

Kinard, John M.: *See*—
Cusey, Dar L.; and Kinard, John M., 4,542,383, Cl. 343-903.000.

King, Milton T.: *See*—
Constien, Vernon G.; and King, Milton T., 4,541,935, Cl. 252-8.55R.

King, Zelbert D., Jr. Guide roller for feeding electrical wire into conduit. 4,541,615, Cl. 254-134.3FT.

Kinoshita, Akemi; Araki, Ken; Nawafune, Hidemi; and Mizumoto, Shozo, to C. Uyemura & Co., Ltd. Analytical method for determining formaldehyde in electroless copper plating bath. 4,541,902, Cl. 204-1.00T.

Kinoshita, Katsuharu: *See*—
Nishimura, Sadanori; and Kinoshita, Katsuharu, 4,541,515, Cl. 192-85.0AA.

Kirby, John R., to J. A. Preston Corporation. Simulated hydrotherapy bath. 4,541,418, Cl. 128-24.100.

Kirkpatrick, Ralph A.: *See*—
Rieck, Harold P.; and Kirkpatrick, Ralph A., 4,541,774, Cl. 415-115.000.

Kishi, Hirotoshi, to Canon Kabushiki Kaisha. Image display apparatus. 4,541,706, Cl. 355-3.00R.

Kishi, Noriyuki; and Hirao, Yoshikazu, to Honda Giken Kogyo Kabushiki Kaisha. Abnormality detecting apparatus for means for sensing operating parameters of an internal combustion engine. 4,541,386, Cl. 123-479.000.

Kishi, Noriyuki, to Honda Giken Kogyo Kabushiki Kaisha. Method of controlling an exhaust gas recirculating valve in an internal combustion engine. 4,541,398, Cl. 123-571.000.

Kiss, Ferenc: *See*—
Gomory, Pal; Hegedus, Janos; Kiss, Ferenc; and Simon, Attila, 4,541,488, Cl. 166-307.000.

Kitahara, Shizuo; Fujii, Toshihiro; and Sugi, Nagatoshi, to Nippon Zeon Co Ltd. Cis-1,4-polyisoprene rubber composition. 4,542,190, Cl. 525-332.600.

Kitajima, Hiroyuki; Ohmachi, Kazuhiko; Doki, Mitsuru; Kazama, Junichi; and Kanao, Hidekazu, to Hitachi, Ltd. Method of and apparatus for assigning software resources to memory devices. 4,542,458, Cl. 364-200.000.

Kitajima, Houdo: *See*—
Yamamoto, Takashi; and Kitajima, Houdo, 4,542,315, Cl. 310-348.000.

Kitamura, Shuji: *See*—
Fukushima, Nobuo; Kitamura, Shuji; Nakae, Kiyohiko; Kotani, Kozo; Terazawa, Takayuki; and Nakarai, Toyoaki, 4,542,061, Cl. 428-220.000.

Kitamura, Sunao, to Aisan Kogyo Kabushiki Kaisha. Throttle control device for internal combustion engine. 4,541,378, Cl. 123-333.000.

Kitani, Masakatu: *See*—
Saito, Toranosuke; Kitani, Masakatu; Ishibashi, Takashi; Arai, Naoto; Murakami, Takeshi; and Suzuki, Toshitake, 4,542,395, Cl. 346-216.000.

Klann, Horst. Spring cramp, particularly for axle springs of motor vehicles. 4,541,614, Cl. 254-10.500.

Kleemann, Axel: *See*—
Engel, Jurgen; Kleemann, Axel; Posselt, Klaus; Stroman, Fritz; and Thiemer, Klaus, 4,542,159, Cl. 514-653.000.

Klein, Wilfried; Klink, Erich; Najmann, Knut; and Wernicke, Friedrich, to International Business Machines Corporation. Phase splitter with integrated latch circuit. 4,542,309, Cl. 307-513.000.

Kleinnibbelink, Gerrit J.; and Timmer, Anton O., to Thomassen & Drijver-Verblifa N.V. Method of checking the coating of a metal surface and device for carrying out the same. 4,542,296, Cl. 250-359.100.

Kleinschmit, Peter: *See*—
Strack, Hans; Kleinschmit, Peter; and Parr, Ehrfried, 4,542,115, Cl. 502-64.000.

Klessing, Klaus; and Chatterjee, Shyam S., to Dr. Willmar Schwabe GmbH & Co. Alkylaminodesoxy-1.4;3.6-dianhydrohexitol nitrates substituted by purine bases and pharmaceutical compositions. 4,542,137, Cl. 514-265.000.

Klietz, Jurgen: *See*—
Grosse, Arsene; Harder, Hans E.; and Klietz, Jurgen, 4,541,424, Cl. 128-92.0EB.

Kliever, Leland B.: *See*—
Falk, John C.; and Kliever, Leland B., 4,542,179, Cl. 524-432.000.

Klink, Erich: *See*—
Klein, Wilfried; Klink, Erich; Najmann, Knut; and Wernicke, Friedrich, 4,542,309, Cl. 307-513.000.

Klockner-Humboldt-Deutz AG: *See*—
Becker, Jorgen; Hendricks, Arno; Herchenbach, Horst; Steinbiss, Eberhard; and Rensinghoff, Werner, 4,541,245, Cl. 60-648.000.

Knauer, Scott C.: *See*—
Huang, Alan; and Knauer, Scott C., 4,542,497, Cl. 370-60.000.

Knechtel, Wilhelm, to Canon Kabushiki Kaisha. Copying apparatus having two separate fusing stations for repeated image processing on a copy sheet. 4,541,705, Cl. 355-3.0FU.

Knight, Colin W. T., to Advanced Micro Devices, Inc. Process for fabricating pedestal interconnections between conductive layers in an integrated circuit. 4,541,893, Cl. 156-643.000.

Knock, Anthony J.: *See*—
Riediger, Craig W.; Mangus, Ervin E.; Simmons, Gerald P.; and Knock, Anthony J., 4,541,497, Cl. 180-6.480.

Knoll, Peter; Rapps, Peter; and Ziegler, Wolfgang, to Robert Bosch GmbH. Method of making color-neutral LCD indicators of low residual transmission. 4,541,693, Cl. 350-339.00F.

Knowley, David W. Mud flap hanger. 4,541,646, Cl. 280-154.50R.

Kobayashi, Hideo; and Fukutomi, Yohji, to Honda Giken Kogyo Kabushiki Kaisha. Air intake side secondary air supply system for an internal combustion engine. 4,541,400, Cl. 123-589.000.

Kobayashi, Kyoji; Kato, Masaru; and Fujisawa, Koichi, to Nissan Motor Company, Limited; and Jidosha Denki Kogyo Kabushiki Kaisha. Rain condition dependent wiper control system for an automotive vehicle. 4,542,325, Cl. 318-483.000.

Kobayashi, Masanari: *See*—
Imaizumi, Mamoru; Fujiwara, Takashi; and Kobayashi, Masanari, 4,541,747, Cl. 400-144.200.

Kobayashi, Seishichi: *See*—
Imazu, Katsuhiro; Matsubayashi, Hiroshi; Horiguchi, Makoto; Taira, Kazuo; Kobayashi, Seishichi; and Ueno, Hiroshi, 4,541,546, Cl. 220-456.000.

Kobayashi, Tatsuhiko: *See*—
Ohtani, Masaaki; Harada, Takao; Oyaizu, Yoshijiro; and Kobayashi, Tatsuhiko, 4,542,070, Cl. 428-416.000.

Kobel, Hans; Sanglier, Jean-Jacques; Tscherter, Hans; and Bolliger, Georg, to Sandoz Ltd. 9'Thia-ergots. 4,542,135, Cl. 514-250.000.

Kobylinski, Thaddeus P.: *See*—
Beuther, Harold; Kobylinski, Thaddeus P.; Lee, Win-Chung; and Schmid, Bruce K., 4,541,916, Cl. 208-8.0LE.

Kochs Adler AG: *See*—
Fischer, Jochen, 4,541,348, Cl. 112-121.120.

Kodama, Hisashi, to Aisin Seiki Kabushiki Kaisha. Hydraulic lifter for internal combustion engine. 4,541,374, Cl. 123-90.590.

Kodama, Kenjiro; Kuninaka, Akira; and Saneyoshi, Mineo, to Yamasa Shoyu Kabushiki Kaisha; and Saneyoshi, Mineo. Antitumor compositions for non-injection administration. 4,542,021, Cl. 514-49.000.

Koenig & Bauer Aktiengesellschaft: *See*—
Barrois, Claus D., 4,541,339, Cl. 101-349.000.

Kohm, Erich: *See*—
Hilpert, Fritz; Kohm, Erich; Rudolph, Volker; and Wohnsdorf, Manfred, 4,542,393, Cl. 346-163.000.

Koike, Masao: *See*—
Nakajima, Taiji; Togawa, Tsuneo; and Koike, Masao, 4,542,031, Cl. 426-307.000.

Koizumi, Mitsuyoshi: *See*—
Akiyama, Nobuyuki; and Koizumi, Mitsuyoshi, 4,541,715, Cl. 356-237.000.

Kojima, Takaaki: *See*—
Koshizuka, Kunihiro; Matsuzaka, Syoji; and Kojima, Takaaki, 4,542,094, Cl. 430-569.000.

Kojima, Yasuo; and Sasa, Nobumasa, to Konishiroku Photo Industry Co., Ltd. Photopolymerizable compositions and image-forming materials using said compositions. 4,542,088, Cl. 430-273.000.

Kollberg, Sten: *See*—
Eriksson, Jan Erik; Karlsson, Mats; Kollberg, Sten; and Mansson, Bengt, 4,541,472, Cl. 164-504.000.

Kollmannsberger, Otto; and Schmid, Martin, to Steinbock GmbH. Switching circuit for supervising the degree of wear of commutator-contacting carbon brushes. 4,542,374, Cl. 340-648.000.

Kollmeyer, Willy D.: *See*—
Payne, George B.; Soloway, Samuel B.; Powell, James E.; Roman, Steven A.; and Kollmeyer, Willy D., 4,542,244, Cl. 568-825.000.

Kollmorgen Technologies Corp.: *See*—
Dickerson, Ray, 4,541,575, Cl. 242-703.000.
Lassen, Charles L., 4,541,882, Cl. 156-150.000.

Kolze, Lawrence A., to Eaton Corporation. Freeze protection valve with metal to plastic fitting design. 4,541,448, Cl. 137-62.000.

Kondo, Makoto: *See*—
Itoh, Kazuhito; and Kondo, Makoto, 4,541,510, Cl. 184-6.120.

Konishiroku Photo Industry Co., Ltd.: *See*—
Kojima, Yasuo; and Sasa, Nobumasa, 4,542,088, Cl. 430-273.000.
Koshizuka, Kunihiro; Matsuzaka, Syoji; and Kojima, Takaaki, 4,542,094, Cl. 430-569.000.
Maekawa, Yoshikazu, 4,541,713, Cl. 355-75.000.
Momose, Haruhiko; Takahashi, Toshiaki; Hoshino, Yasushi; Matsushima, Kohji; and Yagi, Michio, 4,541,702, Cl. 354-400.000.
Sakuma, Takeyuki; Nakamura, Masaji; and Mizukoshi, Matsuo, 4,541,173, Cl. 29-806.000.

Koontz, Harry S., to PPG Industries, Inc. Method and apparatus utilizing magnetic field sensing for detecting discontinuities in a conductor member associated with a glass sheet. 4,542,333, Cl. 324-52.000.

Korkowski, Richard. Power driven hand tool. 4,541,314, Cl. 81-58.100.

Kornrumpf, William P.; and Alley, Robert P., to General Electric Company. Operating circuit for magnetoelastic force/pressure sensors. 4,541,288, Cl. 73-862.690.

Korzonas, Raymond: *See*—
Andrepont, John S.; and Korzonas, Raymond, 4,541,248, Cl. 62-54.000.

Kosak, Wolfgang; Reischl, Rolf; and Pschera, Andreas, to Robert Bosch GmbH. Current regulator for an electromagnetic load utilized in conjunction with an internal combustion engine. 4,541,389, Cl. 123-490.000.

Kosaka, Toshiyuki: *See*—
Sakurai, Toshizo; and Kosaka, Toshiyuki, 4,542,099, Cl. 435-199.000.

Kosan Teknova A/S: *See*—
Christiansen, Ole, 4,541,464, Cl. 141-198.000.

Koseki, Kazusuke: *See*—
Awano, Shunya; Koseki, Kazusuke; and Nishida, Masanori, 4,541,264, Cl. 72-257.000.

Koshino, Yutaka: *See*—
Hiraki, Shunichi; Kumamaru, Kuniaki; Koshino, Yutaka; and Yonezawa, Toshio, 4,542,400, Cl. 357-54.000.

Koshizuka, Kunihiro; Matsuzaka, Syoji; and Kojima, Takaaki, to Konishiroku Photo Industry Co., Ltd. Silver halide emulsion. 4,542,094, Cl. 430-569.000.

Koss, Walter. Surgical instrument assembly. 4,541,427, Cl. 128-305.300.

Koster, Raymond E. Automatic fifth wheel lubrication system. 4,541,651, Cl. 280-433.000.

Kotake, Eiichi; Enami, Ken; and Wada, Kinzo, to Victor Company of Japan. Rotation control device for information recording disc. 4,542,423, Cl. 360-73.000.

Kotani, Kozo: *See*—
Fukushima, Nobuo; Kitamura, Shuji; Nakae, Kiyohiko; Kotani, Kozo; Terazawa, Takayuki; and Nakarai, Toyoaki, 4,542,061, Cl. 428-220.000.

Kotoda, Yoshihiro: *See*—
Tomita, Seiji; Morinaga, Kaoru; and Kotoda, Yoshihiro, 4,542,430, Cl. 360-106.000.

Kouge, Shinichi: *See*—
Morishita, Mitsuharu; and Kouge, Shinichi, 4,542,462, Cl. 364-424.000.

Koyama, Hiromichi: *See*—
Oie, Naoyuki; Koyama, Hiromichi; and Takegawa, Takafumi, 4,541,847, Cl. 55-124.000.

Kozlik, Tony J.; and Spiesman, Robert L., to Honeywell Inc. Manchester decoder. 4,542,420, Cl. 360-42.000.

Kozlowski, Mark F.: *See*—
Forman, Edward W.; and Kozlowski, Mark F., 4,541,583, Cl. 242-56.00A.

Kraft, Kurt; Walz, Gerd; and Wirth, Thaddaus, to Hoechst Aktiengesellschaft. Reactive hardenable polymer mixture and process for the preparation of hardened products therefrom. 4,542,192, Cl. 525-438.000.

Kraftwerk Union Aktiengesellschaft: *See*—
Reinhardt, Dieter, 4,541,841, Cl. 48-197.00R.

Kramatorsky Industrialny Institut: *See*—
Potapkin, Viktor F.; Morozov, Igor A.; Fedorinov, Vladimir A.; and Ravich, Alexandr S., 4,541,263, Cl. 72-243.000.

Kramer, Melvin G., to Brunton Company, The. Autopilot system. 4,542,464, Cl. 364-457.000.

Kramer, Wolfgang: *See*—
Weissmuller, Joachim; Kramer, Wolfgang; Berg, Dieter; Reinecke, Paul; Brandes, Wilhelm; and Hanssler, Gerd, 4,542,130, Cl. 514-212.000.

Krautsack, Richard G.: *See*—
Villanueva, Jesus R.; and Krautsack, Richard G., 4,541,598, Cl. 248-221.400.

Kreimes, Norbert: *See*—
Stumpfi, Werner; Bettinger, Gunter; Engel, Friedrich; Fitterer, Horst; Kreimes, Norbert; Pfefferkorn, Dietmar; Schaffer, Norbert; and Schmidts, Kurt, 4,541,587, Cl. 242-197.000.

Kreuzgruber, Dietrich, to Voest-Alpine Aktiengesellschaft. Press for forming sheet metal elements. 4,541,318, Cl. 83-409.000.

Kriek, George R.; Chung, James Y. J.; Reinert, Gerard E.; and Neuray, Dieter, to Mobay Chemical Corporation. Thermoplastic polyester molding composition having an improved impact performance. 4,542,177, Cl. 524-98.000.

Krikorian, Paul P. Coronary augmenter. 4,541,417, Cl. 128-1.00D.

Kriska, Nicholas J.: *See*—
Hickman, John R.; Kriska, Nicholas J.; Brechtelsbauer, Jeffrey H.; Mediate, Bruno A.; and Rotheiser, Jordan I., 4,541,541, Cl. 220-253.000.

Krogsrud, Harald, to Elkem a/s. Means for processing a solid gravel like material with a fluid. 4,541,991, Cl. 422-269.000.

Krone GmbH: *See*—
Gerke, Dieter; Muller, Manfred; Zytowski, Peter; and Radelow, Wolfgang, 4,541,682, Cl. 339-111.000.

Kroninger, Paul M., Jr.: *See*—
Freud, Paul J.; Baxter, Ronald D.; and Kroninger, Paul M., Jr., 4,542,435, Cl. 361-283.000.

Kruse, Hansjorg: *See*—
Kuch, Heinz; and Kruse, Hansjorg, 4,542,148, Cl. 514-418.000.

Kubik, Peter S.: *See*—
Alles, Harold G.; and Kubik, Peter S., 4,542,375, Cl. 340-712.000.

Kubo, Kanji, to Honda Giken Kogyo Kabushiki Kaisha. Seal member and tolerance compensator. 4,541,641, Cl. 277-183.000.

Kubota, Kazuho; and Todoroki, Masao, to Daiichi-Geyer Kabushiki Kaisha. Metal mold device. 4,541,605, Cl. 249-142.000.

Kubota, Ltd.: *See*—
Shimoie, Shizuo, 4,541,161, Cl. 29-401.100.

Kubota, Masao. Revolving cutting tool. 4,541,756, Cl. 407-45.000.

Kuch, Heinz; and Kruse, Hansjorg, to Hoechst Aktiengesellschaft. 2-Oxo-3-phenyl indole derivatives, drugs having a neuroanabolic action containing them, and their use. 4,542,148, Cl. 514-418.000.

Kudo, Isao: *See*—
Kanaya, Takakuni; Kudo, Isao; and Yokota, Seiji, 4,541,299, Cl. 74-493.000.

Kuhl, Wilfried: *See*—
Haessler, Heinrich; and Kuhl, Wilfried, 4,542,266, Cl. 200-144.00B.

Kuhlthau, Hans-Peter: *See*—
Raue, Roderich; Kuhlthau, Hans-Peter; and Lehment, Klaus-Friedrich, 4,542,223, Cl. 548-455.000.
Raue, Roderich; and Kuhlthau, Hans-Peter, 4,542,224, Cl. 548-455.000.

Kullman, Russell M. H.: *See*—
Graham, Clarence O., Jr.; Shepard, Charles L.; Ruppenicker, George F., Jr.; and Kullman, Russell M. H., 4,541,231, Cl. 57-12.000.

Kulper, Klaus: *See*—
Kaminsky, Walter; Hahnsen, Heinrich; Kulper, Klaus; and Woldt, Rudiger, 4,542,199, Cl. 526-160.000.

Kulzer & Co. GmbH: *See*—
Mackert, Wilhelm; and Matthay, Karlheinz, 4,541,801, Cl. 433-26.000.

Kumagai, Tadanobu: *See*—
Sawabe, Masaki; and Kumagai, Tadanobu, 4,541,817, Cl. 464-111.000.

Kumamaru, Kuniaki: *See*—
Hiraki, Shunichi; Kumamaru, Kuniaki; Koshino, Yutaka; and Yonezawa, Toshio, 4,542,400, Cl. 357-54.000.

Kumata, Koji; and Fukuda, Masao, to Sanyo Chemical Industries, Ltd. Polyurethane based on epoxy-containing polymer polyol and process for making the same. 4,542,165, Cl. 521-137.000.

Kuninaka, Akira: *See*—
Kodama, Kenjiro; Kuninaka, Akira; and Saneyoshi, Mineo, 4,542,021, Cl. 514-49.000.

Kunkel, Heinrich: *See*—
Olschewski, Armin; Laszlofalvi, Zoltan; and Kunkel, Heinrich, 4,541,818, Cl. 464-134.000.

Kuraflex Co., Ltd.: *See*—
Yoshida, Seiichi; and Takeuchi, Shigekazu, 4,542,060, Cl. 428-287.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Ohsugi, Katsuhisa; Ichida, Junji; and Takahashi, Eisaku, 4,542,154, Cl. 514-475.000.

Kurokawa, Masahiro: *See*—
Miyamoto, Akira; Sato, Katsuo; Ichikawa, Tetsushi; and Kurokawa, Masahiro, 4,541,958, Cl. 260-404.500.

Kurokawa, Shigeo: *See*—
Kyono, Kazuaki; Kurokawa, Shigeo; Kimura, Hajime; Irie, Toshio; Yoshihara, Takahisa; and Matsuda, Akira, 4,541,903, Cl. 204-28.000.

Kurosaki, Takefumi: *See*—
Nakazawa, Yuzo; Ono, Kazuo; Tanaka, Masaki; Morita, Takao; and Kurosaki, Takefumi, 4,542,356, Cl. 333-195.000.

Kurosawa, Takuzo: *See*—
Kanamaru, Hisanobu; Tohkairin, Akira; and Kurosawa, Takuzo, 4,541,315, Cl. 82-40.00R.

Kurt Wolf & Co. KG: *See*—
Andre, Wolfram K., 4,541,733, Cl. 374-149.000.

Kurusu, Chisato: *See*—
Suzuki, Hiroshi; Natsuhara, Masao; and Kurusu, Chisato, 4,542,320, Cl. 315-15.000.

Kusayanagi, Sampo: *See*—
Matsunaga, Atsushi; Kusayanagi, Sampo; Takano, Masamitu; and Kato, Yutaka, 4,542,246, Cl. 585-6.600.

Kushibiki, Junichi: *See*—
Chubachi, Noriyoshi; and Kushibiki, Junichi, 4,541,281, Cl. 73-606.000.

Kusner, Ronald R.: *See*—
Comey, David M.; and Kusner, Ronald R., 4,541,730, Cl. 374-43.000.

Kuwana, Theodore; and Kao, Wen-Hong, to Ohio State University Research Foundation, The. Electrodes for use in electrocatalytic processes. 4,541,905, Cl. 204-38.700.

Kuzuhara, Hiroshi: *See*—
Fujiwara, Masakatu; Miyamoto, Takeshi; Kuzuhara, Hiroshi; and Morimoto, Toshiya, 4,541,573, Cl. 241-36.000.

Kuzunishi, Hiroyuki, to Chuo Hatsujo Kabushiki Kaisha. Flexible coaxial pushpull cable. 4,541,303, Cl. 74-501.00R.

Kwiatkowski, Keith A.; Fernandez, John E.; and LaRocca, William J., to Gulf & Western Manufacturing Company. Manually operable gearshift mechanism. 4,541,300, Cl. 74-476.000.

Kyono, Kazuaki; Kurokawa, Shigeo; Kimura, Hajime; Irie, Toshio; Yoshihara, Takahisa; and Matsuda, Akira, to Kawasaki Steel Corporation. Process for preparing Zn-Fe base alloy electroplated steel strips. 4,541,903, Cl. 204-28.000.

L. & C. Steinmuller GmbH: *See*—
Becker, Jorgen; Hendricks, Arno; Herchenbach, Horst; Steinbiss, Eberhard; and Rensinghoff, Werner, 4,541,245, Cl. 60-648.000.

La Gard, Inc.: *See*—
Uyeda, Tim M., 4,541,259, Cl. 70-316.000.

Labows, John N., Jr.; Webster, Guy; and McGinley, Kenneth J., to Monell Chemical Senses Center; and Simon Greenberg Foundation, The. Production of gamma-lactone, rich flavor additives by Pityrosporum species cultured on lipid rich substrates. 4,542,097, Cl. 435-126.000.

LaCamera, Alfred F.: *See*—
Culleiton, Charles J.; LaCamera, Alfred F.; and Robare, Thomas J., 4,541,907, Cl. 204-67.000.

Lacey, David: *See*—
Gray, George W.; Lacey, David; Pellatt, Martin G.; and Sturgeon, Bennett, 4,542,230, Cl. 560-01.000.

Lacroix, Guy; Anding, Claude; and Viricel, Andree, to Rhone-Poulenc Agrochimie. Fungicidal salts of organophosphorus derivatives. 4,542,023, Cl. 514-126.000.

Lade, Robert W.: *See*—
Schutten, Herman P.; Benjamin, James A.; and Lade, Robert W., 4,542,396, Cl. 357-23.400.

Laine, Unto, to Euroka Oy. Model and filter circuit for modeling an acoustic sound channel, uses of the model, and speech synthesizer applying the model. 4,542,524, Cl. 381-53.000.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See*—
Bosquain, Maurice; Grenier, Maurice; Hay, Leon; Lapeyre, Paul; Lehman, Jean-Yves; Petit, Pierre; and Sauty, Pierre, 4,541,851, Cl. 55-208.000.
Louradour, Pierre; and Roullet, Alain, 4,541,251, Cl. 62-64.000.

Laird, Carol G.: *See*—
Coad, Edward F.; and Laird, Carol G., 4,541,227, Cl. 53-500.000.

Lambert, Daryl J. Pergolas. 4,541,214, Cl. 52-473.000.

Lambert, John M.: *See*—
Blattler, Walter A.; Lambert, John M.; and Senter, Peter D., 4,542,225, Cl. 548-473.000.

Lambert, William A.: *See*—
Miknyocki, Ronald J.; and Lambert, William A., 4,541,547, Cl. 221-260.000.

Lamparter, Richard A.; Barna, Bruce A.; and Johnsrud, David R., to Michigan Technological University, Board of Control of. Process for recovering terephthalic acid from waste polyethylene terephthalate. 4,542,239, Cl. 562-487.000.

Lancaster, Charles E., to Schlumberger Technology Corporation. Annular electrical contact apparatus for use in drill stem testing. 4,541,481, Cl. 166-65.100.

Land Pyrometers Limited: *See*—
Clay, William, 4,541,292, Cl. 73-864.550.

Landon, Thomas E.: *See*—
Secrist, Duane R.; Clark, James M.; and Landon, Thomas E., 4,541,912, Cl. 204-290.00R.

Lang, Helmut V.; and LeMong, Son, to BBC Brown, Boveri & Company, Limited. Feed water preheater. 4,541,366, Cl. 122-441.000.

Langa, John M., to RIS Irrigation Systems. Drip irrigation conduit and method of making the same. 4,541,569, Cl. 239-450.000.

Lange, Erhard: *See*—
Dorffel, Jorg; Lange, Erhard; Otte, Werner; and Heinrich, Friedrich, 4,542,194, Cl. 525-521.000.

Lange, Russell C., to International Business Machines Corporation. One-device random access memory cell having enhanced capacitance. 4,542,481, Cl. 365-149.000.

Langner, Carl G., to Shell Oil Company. Subsea pipeline connection. 4,541,753, Cl. 405-166.000.

Lapeyre, Paul: *See*—
Bosquain, Maurice; Grenier, Maurice; Hay, Leon; Lapeyre, Paul; Lehman, Jean-Yves; Petit, Pierre; and Sauty, Pierre, 4,541,851, Cl. 55-208.000.

LaPierre, Rene B.; and Partridge, Randall D., to Mobil Oil Corporation. Shape selective dewaxing using coke modified large pore zeolites. 4,541,919, Cl. 208-111.000.

Largent, William J.: *See*—
White, Kenneth B.; and Largent, William J., 4,542,163, Cl. 521-105.000.

LaRocca, William J.: *See*—
Kwiatkowski, Keith A.; Fernandez, John E.; and LaRocca, William J., 4,541,300, Cl. 74-476.000.

LaRos Equipment Company: *See*—
Brule, Paul L., 4,541,531, Cl. 209-664.000.

Larsen, E. Richard: *See*—
Karst, Daniel; Strege, Gary; and Larsen, E. Richard, 4,541,409, Cl. 126-299.00D.

Larsen, Laurits A. B., to Dansk Industri Syndikat A/S. Plant for the production of vertically divided flaskless casting moulds and including equipment for pattern board exchange. 4,541,476, Cl. 164-182.000.

Larsen, Ole F. Method of producing and laying a barrier structure. 4,541,751, Cl. 405-15.000.

Lasko, John A. Cast metal outlet fitting. 4,541,656, Cl. 285-286.000.

Lassche, Jakob. Device for activating a switching element by a deceleration thereof. 4,541,504, Cl. 180-268.000.

Lassen, Charles L., to Kollmorgen Technologies Corporation. Process for the manufacture of substrates to interconnect electronic components and articles made by said process. 4,541,882, Cl. 156-150.000.

Laszlofalvi, Zoltan: *See*—
Olschewski, Armin; Laszlofalvi, Zoltan; and Kunkel, Heinrich, 4,541,818, Cl. 464-134.000.

Lau, Alfred T. Y.: *See*—
Lee, James S. W.; Chow, Kwong-Wai; Lau, Alfred T. Y.; and Chow, Ming-Ngar, 4,541,815, Cl. 446-464.000.

Lauber, Michael L.: *See*—
Dieckmann, J. Robert; Lauber, Michael L.; and Roodvoets, Mark R., 4,541,978, Cl. 264-150.000.

Laurent, Henry: *See*—
Bittler, Dieter; Laurent, Henry; Nickisch, Klaus; Weichert, Rudolf; and Casals-Stenzel, Jorge, 4,542,128, Cl. 514-177.000.

Nickisch, Klaus; Bittler, Dieter; Laurent, Henry; Wiechert, Rudolf; and Losert, Wolfgang. 4,542,024, Cl. 514-178.000.

Laurent, Thierry M.: *See—*
Wincn, John M.; and Laurent, Thierry M., 4,542,308, Cl. 307-494.000.

Laverick, William J.; and Kendall, George A., to Wizer, Equipment, Inc. Sheet numbering machine. 4,541,338, Cl. 101-316.000.

Layer, Howard P., to Frazier Precision Instrument Company, Inc.; and Holometrics Inc. Measurement circuit for load cell mass comparator. 4,541,496, Cl. 177-211.000.

Leadbeatter, Bruce R. Expandable woodturning chuck. 4,541,465, Cl. 142-55.000.

Leatherman, Alfred F., to Heller, William C., Jr. Method and apparatus for heat sealing plastic members. 4,541,891, Cl. 156-379.600.

Le Besco, Joel V.: *See—*
Bodros, Christian Y.; Le Besco, Joel V.; and Sichez, Yves R., 4,542,498, Cl. 370-60.000.

Lecloux, Andre; and Legrand, Franz, to SOLVAY & Cie (Societe Anonyme). Process for the preparation of 2,2,2-trifluoroethanol. 4,542,245, Cl. 568-842.000.

Leder, Philip, to President and Fellows of Harvard College. Detecting rearranged human c-myc DNA fragments associated with oncogenes. 4,542,096, Cl. 435-6.000.

Lederman, Frederick E., to General Motors Corporation. Unitized steering column bearing assembly. 4,541,742, Cl. 384-518.000.

Lederman, Frederick E., to General Motors Coporation. Unitized bearing assembly with moldable race members and labryinth seal. 4,541,744, Cl. 384-607.000.

Ledet, Stephen J., Jr.: *See—*
Bergeron, Hervin J., Jr., 4,541,479, Cl. 165-45.000.

Lee, James S. W.; Chow, Kwong-Wai; Lau, Alfred T. Y.; and Chow, Ming-Ngar, to Lee, James S. W. Toy vehicle. 4,541,815, Cl. 446-464.000.

Lee, Win-Chung: *See—*
Beuther, Harold; Kobylinski, Thaddeus P.; Lee, Win-Chung; and Schmid, Bruce K., 4,541,916, Cl. 208-8.0LE.

Legge, Michael H.: *See—*
Neelameggham, Ramaswami; Abedi, Hedayat; Priscu, John C.; and Legge, Michael H., 4,541,867, Cl. 75-58.000.

le Goff, Yves, to Electronique Serge Dassault. Machine for washing electronic circuits. 4,541,141, Cl. 15-302.000.

Legrand, Franz: *See—*
Lecloux, Andre; and Legrand, Franz, 4,542,245, Cl. 568-842.000.

Lehman, Albert L.: *See—*
Finkl, Charles W.; Lehman, Albert L.; and Philbrick, Herbert S., Jr., 4,541,862, Cl. 75-12.000.

Lehman, Jean-Yves: *See—*
Bosquain, Maurice; Grenier, Maurice; Hay, Leon; Lapeyre, Paul; Lehman, Jean-Yves; Petit, Pierre; and Sauty, Pierre, 4,541,851, Cl. 55-208.000.

Lehment, Klaus-Friedrich: *See—*
Raue, Roderich; Kuhlthau, Hans-Peter; and Lehment, Klaus-Friedrich, 4,542,223, Cl. 548-455.000.

Leibensperger, Robert L.; and Reed, Karl W., to Timken Company, The. Refrigerant cooled tapered roller bearing assembly. 4,541,738, Cl. 384-470.000.

Leighton, Kenneth B., to Spectrum Sports, Inc. Insole. 4,541,184, Cl. 36-44.000.

Leininger, Robert W.; and Decker, Richard G. Solar energy collection system. 4,541,416, Cl. 126-450.000.

Leland Stanford Jr. Univ., The Board of Trustees of the: *See—*
Stryer, Lubert; and Glazer, Alexander N., 4,542,104, Cl. 436-536.000.

Lemal, Jeanine: *See—*
Vandecasteele, Jean-Paul; Ballerini, Daniel; Lemal, Jeanine; and Le Penru, Yann, 4,542,098, Cl. 435-190.000.

Le Merer, Jean-Pierre: *See—*
Leterme, Dominique; and Le Merer, Jean-Pierre, 4,542,492, Cl. 369-46.000.

LeMong, Son: *See—*
Lang, Helmut V.; and LeMong, Son, 4,541,366, Cl. 122-441.000.

Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nyitrai, Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Visky nee Gombos, Zsuzsanna; and Barta nee Szalai, Gizella, to Richter Gedeon Vegyeszeti Gyar Rt. Azetidinone-4-carboxylate containing a protected 3-acetyl group and process for their preparation. 4,541,955, Cl. 260-330.900.

Le Penru, Yann: *See—*
Vandecasteele, Jean-Paul; Ballerini, Daniel; Lemal, Jeanine; and Le Penru, Yann, 4,542,098, Cl. 435-190.000.

Lerner, Richard, to Cine-Tech, Inc. Remote camera viewfinder. 4,541,698, Cl. 354-82.000.

LeRoue, Lloyd J. Hollow telescoping fishing rod. 4,541,197, Cl. 43-18.100.

Leterme, Dominique; and Le Merer, Jean-Pierre, to Thomson CSF. Optical head in a recording and reading device for a data carrier. 4,542,492, Cl. 369-46.000.

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Leverenz, Jacques T. Electrical heat loss control for building perimeter employing plural heaters. 4,542,283, Cl. 219-483.000.

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Lewis, Charles M., to Dayco Corporation. Method of splicing a thermoplastic mandrel and a mandrel made by said method. 4,541,883, Cl. 156-159.000.

Lewis, Danny H.: *See—*
Tice, Thomas R.; Lewis, Danny H.; Cowsar, Donald R.; and Beck, Lee R., 4,542,025, Cl. 424-78.000.

Lewis, David F., to GAF Corporation. Electron beam sensitive resist. 4,542,090, Cl. 430-296.000.

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Person, Dennis W.; Pierce, Stanley L.; and Liang, Polung, 4,541,308, Cl. 74-868.000.

Liburdi, Francesco, to Allied Corporation. Process of making a jack-type electrical connector. 4,541,174, Cl. 29-883.000.

Licentia Patent-Verwaltungs-GmbH: *See—*
Ruff, Gunter, 4,542,262, Cl. 179-2.00E.

Lichfield, William H. Safety spray wand. 4,541,568, Cl. 239-441.000.

Lieder, Bernhard: *See—*
Hibbel, Josef; Gerhardus, Ulrich; Schmidt, Volkmar; Lieder, Bernhard; Scheve, Heinrich; and Zerres, Erwin, 4,541,840, Cl. 48-63.000.

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Martin, Timothy J., Jr.; and Henry, Richard T., 4,541,544, Cl. 220-374.000.

Liimatainen, Heikki: *See—*
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Chakrabarti, Jiban K.; and Hotten, Terrence M., 4,542,131, Cl. 514-220.000.

Limb, John O.: *See—*
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Lindberg, John E., to Owen, Wickersham & Erickson, P.C. Combustion and pollution control system. 4,541,367, Cl. 123-25.00M.

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Weber, Gunter, 4,541,998, Cl. 423-226.000.

Lindenberger, Paul H. Multiple-use ratchet tool. 4,541,310, Cl. 81-60.000.

Lindig, Wolfgang: *See—*
Bednarz, Jurgen; and Lindig, Wolfgang, 4,542,076, Cl. 428-624.000.

Lindley, William A.: *See—*
Kaplan, Morris; and Lindley, William A., 4,542,253, Cl. 585-650.000.

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Links, Heinz: *See—*
Eheim, Franz; Hofer, Gerald; Eckert, Konrad; and Links, Heinz, 4,541,385, Cl. 123-446.000.

Liptak, Andras: *See—*
Szejtli, Jozsef; Liptak, Andras; Nanasi, Pal; Fugedi, Peter; Jodal, Ildiko; Kandra, Lili; and Janossy, Lorant, 4,542,211, Cl. 536-103.000.

Littman, Jon E.: *See—*
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Litton Systems, Inc.: *See—*
Jarvis, George A.; and Sivertson, Larry M., 4,542,268, Cl. 219-10.55B.

Litz, John E.: *See—*
Lowenhaupt, E. Harris; Litz, John E.; and Hoe, Dennis L., 4,541,868, Cl. 75-101.00R.
Lowenhaupt, E. Harris; Litz, John E.; and Howe, Dennis L., 4,541,994, Cl. 423-150.000.

Loch, Werner: *See—*
Schupp, Eberhard; Loch, Werner; Osterloh, Rolf; and Ahlers, Klaas, 4,542,173, Cl. 523-414.000.
Schupp, Eberhard; Loch, Werner; Osterloh, Rolf; and Ahlers, Klaas, 4,542,193, Cl. 525-490.000.

Locher, Johannes: *See—*
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Loder, Rurik K.: *See—*
Schmidt, Jimmy Q.; and Loder, Rurik K., 4,542,342, Cl. 324-207.000.

Logan, Thomas D.; and Wedell, David A., to AMP Incorporated. Continuous strip of jumper cable assemblies. 4,541,677, Cl. 339-17.00F.

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Holter, Walter, 4,541,361, Cl. 119-51.00R.

Lomas, David A.; and Hammershaimb, Harold U., to UOP Inc. Use of lift gas in an FCC reactor riser. 4,541,922, Cl. 208-164.000.

Lomas, David A.; and Hammershaimb, Harold U., to UOP Inc. Catalyst treatment and flow conditioning in an FCC reactor riser. 4,541,923, Cl. 208-164.000.

Long, Jack C. Shower pan. 4,541,132, Cl. 4-614.000.

Longi, Paolo: *See—*
Giannini, Umberto; Longi, Paolo; Deluca, Domenico; and Pivotto, Bruno, 4,542,197, Cl. 526-125.000.
Mayr, Adolfo; Giannini, Umberto; Susa, Ermanno; Longi, Paolo; Giachetti, Ettore; and DeLuca, Domenico, 4,542,198, Cl. 526-125.000.

Lonneman, Alan P.: *See—*
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Loots, Melanie J.: *See—*
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Losert, Wolfgang: *See—*
Nickisch, Klaus; Bittler, Dieter; Laurent, Henry; Wiechert, Rudolf; and Losert, Wolfgang, 4,542,024, Cl. 514-178.000.

Lotze, Herbert: *See—*
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Louis, Edward V.: *See—*
Yester, Francis R., Jr.; Gailus, Paul H.; and Louis, Edward V., 4,542,352, Cl. 331-96.000.

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Lowenhaupt, E. Harris; Litz, John E.; and Howe, Dennis L., to California Nickel Corporation. Method of liberating nickel- and cobalt-enriched fines from laterite. 4,541,994, Cl. 423-150.000.

Lowery, James J.; Plotkin, Neil D.; and Robinson, Jack, to Celanese Corporation. Method for preparing a uniform polyolefinic microporous hollow fiber. 4,541,981, Cl. 264-209.100.

Luard, Nicholas G.: *See—*
Black, Joseph; Foster, Mark A.; and Luard, Nicholas G., 4,541,134, Cl. 5-118.000.

Lucas, Charles H.; and Lewyn, Lanny L., to Hughes Aircraft Company. High efficiency IGFET operational amplifier. 4,542,348, Cl. 330-253.000.

Lucas Industries: *See—*
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Luccarelli, Domenick, Jr.: *See—*
Van Loveren, Augustinus G.; Hanna, Marie R.; Luccarelli, Domenick, Jr.; Bowen, David R.; Vock, Manfred H.; and Wiegers, Wilhelmus J., 4,541,950, Cl. 252-522.00R.

Luchi, Luciano; and Negri, Ettore, to Officine Savio Spa. Procedure for processing with circular knitting machines and circular machines adopting said procedure. 4,541,253, Cl. 66-14.000.

Lucien, Jacques P., to Shell Oil Company. Process for the preparation of a C_2–C_4 paraffin dehydrogenation catalyst. 4,542,248, Cl. 585-322.000.

Luder, Ernst; and Kallfass, Traugott, to Endress U. Hauser GmbH U. Co. Method of manufacturing a moisture sensor. 4,541,904, Cl. 204-38.300.

Luk Lamellen und Kupplungsbau GmbH: *See—*
Reik, Wolfgang, 4,541,514, Cl. 192-70.270.

Lumpp, Robert E., to TRW Inc. Printed circuit board indexing and locking device. 4,541,678, Cl. 339-75.0MP.

Lundh, Joran. Foldable or retractable ladder for mounting in a ceiling. 4,541,508, Cl. 182-178.000.

Lundstrom, Barry, to Fumex AB. Local extraction device. 4,541,327, Cl. 98-115.400.

Lyons, James E.: *See—*
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M&T Chemicals Inc.: *See—*
Meunier, Gilles, 4,542,185, Cl. 525-70.000.

Maak, Norbert; Friedemann, Wolfgang; Fehr, Hans; and Feulner, Kurt, to Henkel Kommanditgesellschaft auf Aktien. Process for forming foundry components. 4,541,869, Cl. 106-38.350.

Mabuchi, Akira, to Toyoda Gosei Co., Ltd. Steering wheel composed of a non-yellowing semi-rigid polyurethane foam. 4,542,166, Cl. 521-176.000.

MacAnally, Richard B.: *See—*
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Maccone, Sergio: *See—*
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MacDonald, Donald. Adjustable width frame member for wall openings. 4,541,212, Cl. 52-217.000.

Macdonell, Gary D.: *See—*
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Machacek, Bob: *See—*
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Machida, Haruhiko: *See—*
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Machmerth, Herbert: *See—*
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Mackert, Wilhelm; and Matthay, Karlheinz, to Kulzer & Co. GmbH. Color scale palette. 4,541,801, Cl. 433-26.000.

MacLean, W. Douglas; and Rasmussen, Robert A. Exercise rowing machine. 4,541,627, Cl. 272-72.000.

Madewell, Jimmy: *See—*
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Maeda, Takeshi: *See—*
Takasago, Masahiro; Maeda, Takeshi; Uno, Motoo; and Mizoguchi, Yasumitsu, 4,542,491, Cl. 369-45.000.

Maekawa, Yoshikazu, to Konishiroku Photo Industry Co., Ltd. Document size-detecting device of copying machine. 4,541,713, Cl. 355-75.000.

Maes, Pieter J.; and Dijkstra, Albert J. Process for separating solids from oils. 4,542,036, Cl. 426-601.000.

Magata, Yoshihiro: *See—*
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Mager, Theodor: *See—*
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Magerl, Johann: *See—*
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Maggioni, Paolo; Minisci, Francesco; and Correale, Mariano, to Brichima S.p.A. Process for preparing 2,3-dihydro-2,2-dimethylbenzofuran-7-ol. 4,542,229, Cl. 549-462.000.

Maghemite Inc.: *See—*
Cavanagh, Patrick E., 4,542,361, Cl. 335-230.000.

Magnetic Separation Systems, Inc.: *See—*
Kenny, Garry R.; Sommer, Edward J., Jr.; and Shepard, Mark E., 4,541,530, Cl. 209-571.000.

Mahler, Gert: *See—*
Schwanitz, Konrad; and Mahler, Gert, 4,541,663, Cl. 296-97.00H.

Maillard, Alain; and Pichon, Michel, to Isover Saint-Gobain. Process and device for the analysis of the heterogeneous features in a transparent material. 4,541,856, Cl. 65-29.000.

Makosch, Gunter: *See—*
Hausler, Gerd; Jarisch, Walter; and Makosch, Gunter, 4,541,720, Cl. 356-345.000.

Malcolm, David H. Method and apparatus for dielectrophoretically enhanced particle collection. 4,541,844, Cl. 55-10.000.

Malcolm, David T.: *See—*
Arena, Joseph W.; Gilson, Karle B.; Malcolm, David T.; and Mellander, John A. R., 4,541,880, Cl. 156-94.000.

Malladi, Madhava: *See—*
Gross, Benjamin; Haddad, James H.; and Malladi, Madhava, 4,541,921, Cl. 208-164.000.

Malmkvist, Hans G.: *See—*
Schmidt, Henning M.; Malmkvist, Hans G.; Aksberg, Arvi J.; and Johansson, Jan H., 4,542,264, Cl. 179-111.00E.

Manago, Takashi: *See—*
Okane, Kohji; Nakajima, Hidemasa; Okamura, Shozo; Sueyasu, Masanobu; and Manago, Takashi, 4,541,617, Cl. 266-65.000.

Manaka, Masao: *See—*
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Mandler, Walter: *See—*
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Manfred, Langer: *See—*
Schalke, Peter; Manfred, Langer; and Huthmacher, Klaus, 4,542,240, Cl. 564-232.000.

Mangus, Ervin E.: *See—*
Riediger, Craig W.; Mangus, Ervin E.; Simmons, Gerald P.; and Knock, Anthony J., 4,541,497, Cl. 180-6.480.

Mannesmann AG: *See—*
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Mansson, Bengt: *See—*
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Mantra Tube Ltd.: *See—*
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Marchetti, Augusto. Taping machine for variable-size cartons. 4,541,888, Cl. 156-468.000.

Marcon, Mario: *See—*
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Marelli Autronica S.p.A.: *See—*
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Maring, Clarence J.: *See—*
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Markem Corporation: *See—*
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Markert, Gerhard: *See—*
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Marletta, Michael, to Castaldo, Louis J. Electric light balloon. 4,542,445, Cl. 362-96.000.

Marlow, Christopher I.; Wiltshire, Anthony R.; and Hulme, Ivan E., to British Aerospace PLC. Automatic tape laying apparatus. 4,541,886, Cl. 156-230.000.
Marsh, Glenn A.; and Buhl, Robert F., to Union Oil Company of California. Pipeline corrosion sensing device and method. 4,541,278, Cl. 73-592.000.
Marsh, Richard L.; and Wetzel, Robert E., to Dayco Corporation. Long synchronous belt. 4,541,823, Cl. 474-205.000.
Martel, Jacques; Tessier, Jean; and Teche, Andre , to Roussel Uclaf. Insecticidal cyclopropane carboxylic acid derivatives with 3-unsaturated-side chain. 4,542,142, Cl. 514-345.000.
Martin, Harry F., to Westinghouse Electric Corp. Steam turbine gland seal control system. 4,541,247, Cl. 60-660.000.
Martin, John E. Radio controlled vehicle within a sphere. 4,541,814, Cl. 446-456.000.
Martin, Michael T.: *See*—
Boser, Ronald J.; and Martin, Michael T., 4,541,352, Cl. 112-265.200.
Martin, Sylvia, to OMI International Corporation. Zinc electroplating and baths therefore containing carrier brighteners. 4,541,906, Cl. 204-55.00R.
Martin, Timothy J., Jr.; and Henry, Richard T., to Light Industrial Company. Venting closure assembly for a milk tank. 4,541,544, Cl. 220-374.000.
Martins, Joseph G.: *See*—
Donermeyer, Donald D.; Martins, Joseph G.; and Fabel, David A., 4,542,047, Cl. 427-374.400.
Maruyama, Kensaku: *See*—
Iino, Shinji; Maruyama, Kensaku; Takenaga, Motoi; Muramoto, Kazuhiko; and Tsuhako, Mitsutomo, 4,542,001, Cl. 423-311.000.
Marzeoti, Frank: *See*—
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Masaki, Hideyuki, to NGK Insulators, Ltd. Packing for packed towers for inter-fluid contact. 4,541,967, Cl. 261-95.000.
Mase, Syunzo; and Soejima, Shigeo, to NGK Insulators, Ltd. Method for heating. 4,541,898, Cl. 204-1.00T.
Mase, Syunzo; and Soejima, Shigeo, to NGK Insulators, Ltd. Method of heating a solid electrolyte body. 4,541,899, Cl. 204-1.00T.
Mase, Syunzo; and Soejima, Shigeo, to NGK Insulators, Ltd. Method for heating solid electrolyte. 4,541,900, Cl. 204-1.00T.
Maselli, James M.: *See*—
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Wurtman, Richard J., 4,542,123, Cl. 514-3.000.
Master Consolidated Corporation: *See*—
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Masuda, Senichi. Pulse power supply for generating extremely short pulse high voltages. 4,541,848, Cl. 55-139.000.
Masuda, Tatsuo: *See*—
Iwai, Kazuhiro; Masuda, Tatsuo; and Takayanagi, Shinji, 4,541,502, Cl. 180-217.000.
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Matsubayashi, Hiroshi: *See*—
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Matsuda, Akira: *See*—
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Matsui, Minoru; and Takahashi, Tomonori, to NGK Insulators, Ltd. Method for producing spinel fine powders. 4,542,112, Cl. 501-120.000.
Matsui, Tadao: *See*—
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Matsunaga, Atsushi; Kusayanagi, Sampo; Takano, Masamitu; and Kato, Yutaka, to Nippon Mining Co., Ltd. Electrical insulating oil having high oxidation stability and method for production thereof. 4,542,246, Cl. 585-6.600.
Matsunaga, Toru: *See*—
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Matsushita Electric Industrial Co., Ltd.: *See*—
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Hotta, Shu; Shimizu, Tokihiko; and Taguchi, Nobuyoshi, 4,541,830, Cl. 8-471.000.
Irie, Hiroyuki; Ide, Susumu; Nonomura, Kinzo; Watanabe, Masanori; and Takesako, Yoshinobu, 4,542,322, Cl. 315-366.000.
Kato, Junichi; Yokotani, Yoichirou; Nishida, Masamitsu; and Ouchi, Hiromu, 4,542,107, Cl. 501-134.000.
Sugai, Manabu; Kagohashi, Yasuyoshi; and Aoki, Hiroshi, 4,541,589, Cl. 242-200.000.
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Matsushita Electric Works, Ltd.: *See*—
Hamabe, Takafumi; Imai, Hirozo; and Hara, Hikoyoshi, 4,541,305, Cl. 74-690.000.
Matsushita Electronics Corporation: *See*—
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Matsuura, Ikutoshi: *See*—
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Matsuzaka, Syoji: *See*—
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Matthay, Karlheinz: *See*—
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Matthews, Carroll H. Composite fisherman support system. 4,541,539, Cl. 220-20.000.
Mattson, David R.; and Coffey, Patrick J. Spectrometer with selectable area detector. 4,542,295, Cl. 250-352.000.
Mauldin, Charles H.: *See*—
Baird, William C., Jr.; and Mauldin, Charles H., 4,541,915, Cl. 208-65.000.
Payne, Virgil L.; and Mauldin, Charles H., 4,542,122, Cl. 502-325.000.
Maurer, Albrecht; and Butz, Alois, to Bizerba-Werke Wilhelm Kraut GmbH & Co. KG. Cold meat slicing machine. 4,541,319, Cl. 83-707.000.
Maurer, Fritz; Homeyer, Bernhard; Becker, Benedikt; and Hanssler, Gerd, to Bayer Aktiengesellschaft. Pesticidally active pyrimidin-5-yl-(thio)phosphoric acid ester-amides. 4,542,126, Cl. 514-86.000.
Maust, Daniel A.: *See*—
Jones, David A.; and Maust, Daniel A., 4,541,139, Cl. 15-171.000.
Mauz, Otto; Sauber, Klaus; and Noetzel, Siegfried, to Hoechst Aktiengesellschaft. Vinylene carbonate polymers, a process for their preparation and their use. 4,542,069, Cl. 428-402.000.
May & Baker Limited: *See*—
Hatton, Leslie R.; Parnell, Edgar W.; and Roberts, David A., 4,541,963, Cl. 260-465.00E.
Mayfield, Glenn A.: *See*—
Brandyberry, Robert E.; Forbes, Mark M.; Gloyeski, David D.; Greafnitz, Russell F.; Phillips, Glen R.; Straw, Robert L.; Stricker, Kevin L.; Szabela, William A.; Webeck, Richard R.; Mayfield, Glenn A.; and Vollmer, William L., 4,542,469, Cl. 364-483.000.
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Akutagawa, Hitoshi; Shigemasa, Masayoshi; and Hayashi, Hiroaki, 4,541,503, Cl. 180-249.000.
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McConnell, Charles K. Trailer alignment apparatus. 4,541,183, Cl. 33-264.000.
McCoy, John B. Paper tray and folder. 4,541,749, Cl. 400-613.200.
McGill, Robert W.; and Winiasz, Michael E., to Figgie International. Case packer. 4,541,524, Cl. 198-470.100.
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McKee, Gerald D.: *See*—
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McLean, Arthur F., to Ford Motor Company. Ceramic turbocharger. 4,541,786, Cl. 417-407.000.
McLeish, Bruce J. Continuous copying apparatus. 4,541,710, Cl. 355-13.000.
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G.; Semitros, Nicholas; and Thornton, Martin Q., 4,541,970, Cl. 264-1.500.

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Miller, Alex E., to Union Oil Company of California. Feed supplements and methods for the preparation thereof. 4,542,032, Cl. 426-319.000.

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Minai, Masayoshi; Katsura, Tadashi; Hamada, Kazuhiko; and Suzukamo, Gohfu, to Sumitomo Chemical Company, Limited. Method for producing an optically active 2,2-dimethylcyclopropanecarboxylic acid. 4,542,235, Cl. 562-401.000.

Miner, Robert J., Jr. Harmonica-to-microphone attachment device. 4,541,321, Cl. 84-379.000.

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Miree, Mallory F. Method and apparatus for mounting flashlights to bicycles. 4,541,555, Cl. 224-41.000.

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Mitchell, Howard L., III; and Sawyer, Willard H., to Exxon Research and Engineering Co. Catalysts from molybdenum polysulfide precursors, their preparation and use. 4,542,121, Cl. 502-220.000.

Mitschang, William. Linear motion roller bearing. 4,541,674, Cl. 308-6.00C.

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Mitsui Toatsu Chemicals, Inc.: *See*—
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Miyako, Hisao: *See*—
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Miyamoto, Akira; Sato, Katsuo; Ichikawa, Tetsushi; and Kurokawa, Masahiro, to Mitsubishi Gas Chemical Company, Inc. Hardening agent for epoxy resins comprising an amideamine compound. 4,541,958, Cl. 260-404.500.

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Modica, Frank S.: *See*—
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Mohan, William L.; and Willits, Samuel P., to Spartanics, Ltd. Frequency determining and lock-on system. 4,542,470, Cl. 364-485.000.

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Mohr, Adolf: *See*—
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Moldawer, Lyle L.; Blackburn, George L.; and Bistrian, Bruce R. Treatment of protein malnourished bacterially infected humans with LEM. 4,542,017, Cl. 424-101.000.

Moldrup, Niels. Impregnation tank for wood. 4,542,046, Cl. 427-298.000.

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Moles, Robert G. H.: *See*—
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Molina-Negro, Pedro; and Garceau, Roger, to Neurotronic Ltee. Electric nerve stimulator device. 4,541,432, Cl. 128-421.000.

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Moll, Manfred, to Rheinmetall GmbH. Wing-stabilized projectile. 4,541,592, Cl. 244-3.220.

Momose, Haruhiko; Takahashi, Toshiaki; Hoshino, Yasushi; Matsushima, Kohji; and Yagi, Michio, to Konishiroku Photo Industry Co., Ltd. Automatic focus adjusting device. 4,541,702, Cl. 354-400.000.

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Reidinger, Russell F., Jr., 4,541,199, Cl. 43-131.000.

Mongiello, Angelo. Cheese cooking system. 4,541,329, Cl. 99-455.000.

Mongiello, Angelo, Jr. Shark protection device. 4,541,194, Cl. 43-6.000.

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Monticelli, Dennis M., to National Semiconductor Corporation. Feed forward Darlington circuit. 4,542,399, Cl. 357-46.000.

Monzon Indave, Martin. Installation for the manufacture by a continuous process of compound panels for building construction. 4,541,164, Cl. 29-430.000.

Moore, Donald W., to Aerojet-General Corporation. Amenable logic gate and method of testing. 4,542,508, Cl. 371-29.000.

Moore, James W., to Wills Trucking, Inc. Trailer unloading apparatus and method. 4,541,765, Cl. 414-267.000.

Moore, Michael L.: *See*—
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Moore, Stephen A.: *See*—
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Morduchowitz, Abraham; and Yaghmaie, Farrokh, to Texaco Inc. Surfactant flooding solutions with sulfonated creosote. 4,541,937, Cl. 252-8.55D.

Morel, Don L.: *See*—
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Morgenstern, Robin; and Osann, Edward W., Jr., to Morgenstern, Robin. Lumbosacral backrest with adjustable contour. 4,541,670, Cl. 297-284.000.

Mori, Kei. Apparatus for collecting sunlight. 4,541,414, Cl. 126-438.000.

Mori, Kei. Solar ray collecting device. 4,541,415, Cl. 126-440.000.

Mori, Yasuharu: *See*—
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Morigaki, Masakazu: *See*—
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Morikawa, Koji, to Fuji Jukogyo Kabushiki Kaisha. System for controlling fuel injection for multiple-displacement engines. 4,541,387, Cl. 123-481.000.

Morimoto, Kiyoshi; and Watanabe, Hiroshi, to Futaba Denshi Kogyo K.K. Fluorescent display tube. 4,542,317, Cl. 313-496.000.

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Morimoto, Toshiya: *See*—
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Morinaga, Kaoru: *See*—
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Morio, Minoru; Nakano, Kenji; and Moriwaki, Hisayoshi, to Sony Corporation. Method and apparatus for recording and reproducing an information signal comprising a video signal and audio signal. 4,542,419, Cl. 360-19.100.

Morishita, Mitsuharu; and Kouge, Shinichi, to Mitsubishi Denki Kabushiki Kaisha. Device for controlling a vehicle charging system. 4,542,462, Cl. 364-424.000.

Morita, Takao: *See*—
Nakazawa, Yuzo; Ono, Kazuo; Tanaka, Masaki; Morita, Takao; and Kurosaki, Takefumi, 4,542,356, Cl. 333-195.000.

Morita, Takayuki: *See*—
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Morris, Ernest E.; and Young, Donald J. Weapon having a utilization recorder. 4,541,191, Cl. 42-1.00A.

Morris, George E.; Nay, Barry; and Stewart, David G., to British Petroleum Company p.l.c., The. Catalyst composition, method for its production. 4,542,117, Cl. 502-66.000.

Morris, Jeffrey D.; and Fuller, Robert A., to Cosden Technology, Inc. Process for producing styrenic/alkenylnitrile copolymers. 4,542,196, Cl. 526-64.000.

Morris, Thomas E.: *See*—
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Mortensen, David J.; and Sheth, Jayesh V., to Burroughs Corporation. Burst mode data block transfer system. 4,542,457, Cl. 364-200.000.

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Reynolds, Keith B.; Freston, Trevor R.; Ord, Richard N.; and Houghton, James T., 4,541,757, Cl. 407-53.000.

Motonaga, Kenjiro: *See*—
Tamura, Setsuo; Motonaga, Kenjiro; Mizokawa, Takumi; Tanaka, Kozo; Kawashima, Katsumi; Hiwatashi, Takaaki; and Sugahara, Takayuki, 4,541,572, Cl. 241-31.000.

Motorola, Inc.: *See*—
Jarrett, Robert B.; and Neidorff, Robert A., 4,542,303, Cl. 307-350.000.
Wilhelm, Randy L., 4,542,381, Cl. 343-5.0CF.
Yester, Francis R., Jr.; Gailus, Paul H.; and Louis, Edward V., 4,542,352, Cl. 331-96.000.

Motruk, John, to Hawaiian Motor Company. Earth-working tool head. 4,541,492, Cl. 172-41.000.

Moul, Robert A.; and Thelen, William, to AT&T Bell Laboratories. Shared data receiver. 4,542,504, Cl. 370-100.000.

Moulden, Alan J.: *See*—
Goddard, John; Mills, David; and Moulden, Alan J., 4,541,475, Cl. 164-65.000.

Moustakas, Steven; and Witte, Hans, to Siemens Aktiengesellschaft. Device and method for reducing level dynamics in an optical transmission system. 4,542,536, Cl. 455-607.000.

Muccitelli, John A., to Betz Laboratories, Inc. Hydroquinone catalyzed oxygen scavenger and methods of use thereof. 4,541,932, Cl. 210-750.000.

Mueller, Warren B. Coal composition. 4,541,833, Cl. 44-16.00R.

Mugnai, Giorgio, to W. R. Grace & Co. Packing process. 4,541,224, Cl. 531-434.000.

Muhlberger, Horst; Prinz, Bruno; Wunder, Wolf; Schafer, Ulrich; and Bognar, Josef, to Muhlberger, Horst. Cast iron with spheroidal graphite and austenitic-bainitic mixed structure. 4,541,878, Cl. 148-139.000.

Mulder, Berend J.; and van Heusden, Sybrandus, to U.S. Philips Corporation. Method of manufacturing a low-pressure mercury vapor discharge lamp and low-pressure mercury vapor discharge lamp manufactured by this method. 4,541,811, Cl. 445-26.000.

Mulders, Joannes M. C. A.: *See*—
Corvers, Antonius; and Mulders, Joannes M. C. A., 4,542,220, Cl. 546-341.000.

Muller, George H., to Ford Motor Company. Wheelchair elevator and docking system. 4,541,511, Cl. 187-9.00R.

Muller, Hans, to Grapha-Holding AG. Apparatus for changing the direction of movement of streams of paper sheets and the like. 4,541,824, Cl. 493-29.000.

Muller, Manfred: *See*—
Gerke, Dieter; Muller, Manfred; Zytowski, Peter; and Radelow, Wolfgang, 4,541,682, Cl. 339-111.000.

Mulvihill, Richard J., to Nike, Inc. Gymnastic shoe with cushioning and shock absorbing insert. 4,541,186, Cl. 36-114.000.

Munchmeyer, Dietrich: *See*—
Becker, Erwin; Bier, Wilhelm; Ehrfeld, Wolfgang; and Munchmeyer, Dietrich, 4,541,977, Cl. 264-102.000.

Munro, John H. Exhaust system for internal combustion engines. 4,541,240, Cl. 60-295.000.

Munsch, John M.; Danielsen, Brant R.; and Miller, Jimmy L., to Baxter Travenol Laboratories, Inc. Automatic connection and disconnection. 4,541,829, Cl. 604-80.000.

Muntwyler, Rene : *See*—
Van Gestel, Josef; Duytschaever, Benedikt; Muntwyler, Rene ; and Scharer, Max, 4,542,146, Cl. 514-383.000.

Murakami, Hideo. Sweat absorbent undershirt. 4,541,129, Cl. 2-113.000.

Murakami, Shohei: *See*—
Onoe, Yoshinori; Takagi, Hiroshi; Ikenaga, Satoru; Tsuchiya, Hiraku; Murakami, Shohei; and Nakao, Masakazu, 4,541,473, Cl. 164-444.000.

Murakami, Takeshi: *See*—
Saito, Toranosuke; Kitani, Masakatu; Ishibashi, Takashi; Arai, Naoto; Murakami, Takeshi; and Suzuki, Toshitake, 4,542,395, Cl. 346-216.000.

Murakami, Taku: *See*—
Chikugo, Kazuo; Murakami, Taku; and Inada, Yorihiko, 4,541,304, Cl. 74-579.00E.

Muramatsu, Shigeru: *See*—
Suzuki, Osamu; Morita, Takayuki; Muramatsu, Shigeru; and Asai, Isao, 4,541,577, Cl. 242-35.50A.

Muramoto, Kazuhiko: *See*—
Iino, Shinji; Maruyama, Kensaku; Takenaga, Motoi; Muramoto, Kazuhiko; and Tsuhako, Mitsutomo, 4,542,001, Cl. 423-311.000.

Murata Kikai Kabushiki Kaisha: *See*—
Kawarabashi, Tsukasa; and Takahashi, Shinji, 4,541,578, Cl. 242-35.50A.

Murata Manufacturing Co., Ltd.: *See*—
Yamamoto, Takashi; and Kitajima, Houdo, 4,542,315, Cl. 310-348.000.

Murata, Ryoji: *See*—
Sawai, Nobushige; Miyasaka, Kaneyoshi; and Murata, Ryoji, 4,541,165, Cl. 29-568.000.

Murphy, Donald W.: *See*—
Cava, Robert J.; and Murphy, Donald W., 4,542,083, Cl. 429-218.000.

Murray, Lawrence K., to Phillips Petroleum Company. Method for production of carbon black and start-up thereof. 4,542,007, Cl. 423-450.000.

Murray, Lester K. Bedding holder. 4,541,137, Cl. 5-498.000.

Murray, Pat L.: *See*—
McClellan, Thomas R.; and Murray, Pat L., 4,542,041, Cl. 427-212.000.

N. D. Engineering Limited: *See*—
Culliford, Michael D., 4,541,346, Cl. 110-246.000.

Naffrechoux, Etienne; and Delfosse, Thierry, to Raychem Corp. Oven door gasket. 4,541,203, Cl. 49-485.000.

Nagafuji, Motonobu, to Hitachi, Ltd. Arithmetic logic unit. 4,542,476, Cl. 364-749.000.

Nagai, Kiichirou, to Pioneer Electronic Corporation. Magnetic tape setting device for use in magnetic tape recording and/or reproducing apparatus. 4,542,427, Cl. 360-72.100.

Nagamoto, Masanaka: *See*—
Suguro, Yoshihiro; and Nagamoto, Masanaka, 4,542,394, Cl. 346-209.000.

Nagane, Hiromichi, to Canon Kabushiki Kaisha. Original reading apparatus. 4,542,414, Cl. 358-285.000.

Nagano, Takahiro: *See*—
Yatsuo, Tsutomu; Naito, Masayoshi; Nagano, Takahiro; Yasuda, Tomio; Onuki, Jin; Yanagi, Mitsuo; and Sato, Fumio, 4,542,398, Cl. 357-38.000.

Nagaoka, Tatsuo: *See*—
Narisawa, Hirokichi; and Nagaoka, Tatsuo, 4,541,331, Cl. 99-567.000.

Nagashima, Masayoshi; Yamane, Hiroshi; Nonoyama, Makoto; and Tashiro, Tsuneo, to Toshiba Corporation. Thermal transfer type printing apparatus. 4,542,387, Cl. 346-76.0PH.

Nagata, Teruyuki: *See*—
Umemoto, Mitsumasa; Asano, Tamotsu; Nagata, Teruyuki; and Numata, Satoshi, 4,542,243, Cl. 568-636.000.

Nagatomi, Akihiko, to DX Antenna Company, Limited. High frequency signal switching device. 4,542,300, Cl. 307-112.000.

Nagel, Robert C. Storage box with snap opening lid and stand. 4,541,527, Cl. 206-45.240.

Naiman, Michael I.; and Schield, John A., to Petrolite Corporation. Ester-containing halopolyalkylenes. 4,541,839, Cl. 44-62.000.

Naito, Masayoshi: *See*—
Yatsuo, Tsutomu; Naito, Masayoshi; Nagano, Takahiro; Yasuda, Tomio; Onuki, Jin; Yanagi, Mitsuo; and Sato, Fumio, 4,542,398, Cl. 357-38.000.

Naito, Youichiro: *See*—
Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; Inoue, Yoshihisa; Naito, Youichiro; and Suyama, Tadakazu, 4,542,147, Cl. 514-411.000.

Najmann, Knut: *See*—
Klein, Wilfried; Klink, Erich; Najmann, Knut; and Wernicke, Friedrich, 4,542,309, Cl. 307-513.000.

Nakada, Takao; Kamimura, Mamoru; and Ashizawa, Toranosuke, to Hitachi Chemical Company, Ltd. Process for producing zirconium oxide sintered body. 4,542,110, Cl. 501-103.000.

Nakae, Kiyohiko: *See*—
Fukushima, Nobuo; Kitamura, Shuji; Nakae, Kiyohiko; Kotani, Kozo; Terazawa, Takayuki; and Nakarai, Toyoaki, 4,542,061, Cl. 428-220.000.

Nakajima, Hidemasa: *See*—
Okane, Kohji; Nakajima, Hidemasa; Okamura, Shozo; Sueyasu, Masanobu; and Manago, Takashi, 4,541,617, Cl. 266-65.000.

Nakajima, Taiji; Togawa, Tsuneo; and Koike, Masao, to Nippon Formula Feed Manufacturing Co. Ltd. Process for the production of animal feedstuff. 4,542,031, Cl. 426-307.000.

Nakako, Yukio: *See*—
Hirokoh, Nobuyoshi; Kageyama, Yoichi; Nakako, Yukio; and Matsumura, Tetsuo, 4,541,914, Cl. 208-10.000.

Nakamichi Corporation: *See*—
Uchikoshi, Gohji, 4,542,371, Cl. 340-347.0DA.

Nakamura, Akira: *See*—
Nishioka, Takeshi; Nakamura, Akira; and Yabe, Kenji, 4,542,164, Cl. 521-135.000.

Nakamura, Asao: *See*—
Niki, Katsumi; Inokuchi, Hiroo; Yagi, Tatsuhiko; and Nakamura, Asao, 4,541,908, Cl. 204-101.000.

Nakamura, Masaji: *See*—
Sakuma, Takeyuki; Nakamura, Masaji; and Mizukoshi, Matsuo, 4,541,173, Cl. 29-806.000.

Nakamura, Masao; and Karato, Kenji, to Bridgestone Tire Company Limited. Heavy duty pneumatic radial tires. 4,541,467, Cl. 152-548.000.

Nakamura, Matsuichi, to Daiwa Steel Tube Industries Co., Ltd. Permanently sealed threadless joint. 4,541,659, Cl. 285-382.200.

Nakamura, Morio: *See*—
Obayashi, Shigeji; Nakamura, Morio; Yamamoto, Takushi; and Fujikake, Masato, 4,541,871, Cl. 106-197.200.

Nakano, Keiji: *See*—
Chabata, Sueji; Nakano, Keiji; Ito, Kichizo; Ueda, Katsuhiko; Iizuka, Hirokazu; Miyako, Hisao; and Fukagawa, Katsumi, 4,542,064, Cl. 428-383.000.

Nakano, Kenji: *See*—
Morio, Minoru; Nakano, Kenji; and Moriwaki, Hisayoshi, 4,542,419, Cl. 360-19.100.
Yoneyama, Shigeyuki; Nakano, Kenji; Moriwaki, Hisayoshi; and Takahashi, Takao, 4,542,418, Cl. 360-19.100.

Nakao, Masakazu: *See*—
Onoe, Yoshinori; Takagi, Hiroshi; Ikenaga, Satoru; Tsuchiya, Hiraku; Murakami, Shohei; and Nakao, Masakazu, 4,541,473, Cl. 164-444.000.

Nakarai, Toyoaki: *See*—
Fukushima, Nobuo; Kitamura, Shuji; Nakae, Kiyohiko; Kotani, Kozo; Terazawa, Takayuki; and Nakarai, Toyoaki, 4,542,061, Cl. 428-220.000.

Nakashima, Yoshimoto: *See*—
Tomisawa, Kazuyuki; Kameo, Kazuya; Matsunaga, Toru; Saito, Shiuji; Nakashima, Yoshimoto; and Sata, Kaoru, 4,541,959, Cl. 260-455.00R.

Nakatani, Toshikazu: *See*—
Sato, Mitomu; Nakatani, Toshikazu; Yamashita, Katsumi; and Ogata, Terumi, 4,541,145, Cl. 24-19.000.

Nakatsuka, Iwao; Eckelman, William; and Rzeszotarski, Waclaw J., to George Washington University, The. Process for preparing iodovinyl-estradiol. 4,541,957, Cl. 260-397.200.

Nakazato, Kazuo, to Fuji Jukogyo Kabushiki Kaisha. System for controlling the air-fuel ratio supplied to an engine. 4,541,384, Cl. 123-437.000.

Nakazato, Kouichi: *See*—
Odaka, Yoshiyuki; Nakazato, Kouichi; and Tomita, Yoshifumi, 4,542,038, Cl. 427-68.000.

Nakazawa, Yuzo; Ono, Kazuo; Tanaka, Masaki; Morita, Takao; and Kurosaki, Takefumi, to Toyo Communication Equipment Co., Ltd. High frequency narrow-band multi-mode filter. 4,542,356, Cl. 333-195.000.

Nalco Chemical Company: *See*—
Kaplan, Morris; and Lindley, William A., 4,542,253, Cl. 585-650.000.

Namiki, Yasuomi, to Victor Company of Japan, Limited. Electromagnetic transducer head assembly. 4,542,422, Cl. 360-67.000.

Nanasi, Pal: *See*—
Szejtli, Jozsef; Liptak, Andras; Nanasi, Pal; Fugedi, Peter; Jodal, Ildiko; Kandra, Lili; and Janossy, Lorant, 4,542,211, Cl. 536-103.000.

Napoli, Joseph D.: *See*—
Francis, Robert W.; Napoli, Joseph D.; and Tsien, Hsue C., 4,542,258, Cl. 136-256.000.

Narabu, Tadakuni, to Sony Corporation. Clock pulse generating circuit. 4,542,301, Cl. 307-269.000.

Narisawa, Hirokichi; and Nagaoka, Tatsuo. Apparatus for routering tuberous sprouts. 4,541,331, Cl. 99-567.000.

Naruse, Yoshihiro, to Aisin Seiki Kabushiki Kaisha. Object detecting system of reflection type. 4,542,489, Cl. 367-93.000.

National Industries, Inc.: *See*—
Cusey, Dar L.; and Kinard, John M., 4,542,383, Cl. 343-903.000.

National Research Development Corporation: *See*—
Graham, Neil B., 4,542,176, Cl. 524-543.000.

National Semiconductor Corporation: *See*—
Monticelli, Dennis M., 4,542,399, Cl. 357-46.000.

Natsuhara, Masao: *See*—
Suzuki, Hiroshi; Natsuhara, Masao; and Kurusu, Chisato, 4,542,320, Cl. 315-15.000.

Nausedas, Joseph A., to Union Carbide Corporation. Packaging method and apparatus. 4,541,226, Cl. 53-459.000.

Nawafune, Hidemi: *See*—
Kinoshita, Akemi; Araki, Ken; Nawafune, Hidemi; and Mizumoto, Shozo, 4,541,902, Cl. 204-1.00T.

Nay, Barry: *See*—
Morris, George E.; Nay, Barry; and Stewart, David G., 4,542,117, Cl. 502-66.000.

NEC Corporation: *See*—
Ide, Tatsumi; and Morimoto, Masayuki, 4,542,359, Cl. 335-78.000.
Watanabe, Kojiro, 4,542,514, Cl. 375-10.000.

NEC Home Electronics Ltd.: *See*—
Oe, Hidemi; and Hayashi, Kiyotaka, 4,542,506, Cl. 371-9.000.

Neefe, Charles W. Method of making toric spin cast lenses. 4,541,969, Cl. 264-1.400.

Neelameggham, Ramaswami; Abedi, Hedayat; Priscu, John C.; and Legge, Michael H., to Amax Inc. Varnish-bonded carbon-coated magnesium and aluminum granules. 4,541,867, Cl. 75-58.000.

Nees, Stephan. Process for the cultivation of matrix-bound biologic cell systems. 4,542,101, Cl. 435-240.000.

Negri, Ettore: *See*—
Luchi, Luciano; and Negri, Ettore, 4,541,253, Cl. 66-14.000.

Neidorff, Robert A.: *See*—
Jarrett, Robert B.; and Neidorff, Robert A., 4,542,303, Cl. 307-350.000.

Nelson, Charles W., to United States of America, General Counsel-Code GP. X-ray determination of parts alignment. 4,542,520, Cl. 378-58.000.

Nelson, Floyd E., to United States of America, Navy. Induced-signal capacitance effect cable tracking sensor. 4,542,334, Cl. 324-61.00R.

Neuehauser, Hans J.: *See*—
Buran, Ulrich; Fischer, Manfred; and Neuehauser, Hans J., 4,542,111, Cl. 501-127.000.

Neuray, Dieter: *See*—
Kriek, George R.; Chung, James Y. J.; Reinert, Gerard E.; and Neuray, Dieter, 4,542,177, Cl. 524-98.000.

Neurotronic Ltee: *See*—
Molina-Negro, Pedro; and Garceau, Roger, 4,541,432, Cl. 128-421.000.

Nevins, Norman; McVay, Robert L.; and Bellanca, Carmen L., to Protective Treatments, Inc. Bonding system for wear surfaces. 4,542,053, Cl. 428-48.000.

Newbill, Leston L. Game with two separated electrically-connected boards. 4,541,633, Cl. 273-238.000.

Newman, Wyatt S.; and Goldowsky, Michael P., to North American Philips Corporation. Long linear stroke reciprocating electric machine. 4,542,311, Cl. 310-13.000.

Newton, Charles L.; Stuber, Wayne G.; and Patterson, Michael A., to Air Products and Chemicals, Inc. Deep flash LNG cycle. 4,541,852, Cl. 62-11.000.

NGK Insulators, Ltd.: *See*—
Masaki, Hideyuki, 4,541,967, Cl. 261-95.000.
Mase, Syunzo; and Soejima, Shigeo, 4,541,898, Cl. 204-1.00T.
Mase, Syunzo; and Soejima, Shigeo, 4,541,899, Cl. 204-1.00T.
Mase, Syunzo; and Soejima, Shigeo, 4,541,900, Cl. 204-1.00T.
Matsui, Minoru; and Takahashi, Tomonori, 4,542,112, Cl. 501-120.000.

Nichols, Edward L., III; and Harrison, Edward A., to Square D Company. Ground fault detection circuit. 4,542,432, Cl. 361-44.000.

Nichols, Max, to Aurora Equipment Company. Cantilever shelving rack. 4,541,344, Cl. 108-.08.000.

Nickisch, Klaus; Bittler, Dieter; Laurent, Henry; Wiechert, Rudolf; and Losert, Wolfgang, to Schering Aktiengesellschaft. 15,16 -Methylene-17α-pregna-4,6-diene-21-carboxylic acid salts, pharmaceutical preparations containing them and a process for their production. 4,542,024, Cl. 514-178.000.

Nickisch, Klaus: *See*—
Bittler, Dieter; Laurent, Henry; Nickisch, Klaus; Weichert, Rudolf; and Casals-Stenzel, Jorge, 4,542,128, Cl. 514-177.000.

Nickloy, Charles H.; and Plunkett, Thomas H., to Contour Packaging, Inc. Snap-in ceiling system. 4,541,215, Cl. 52-479.000.

Nickola, Richard A.; Sok, Brian A.; and Agarwal, Shashi B., to Inland Steel Company. Powder metal and/or refractory coated ferrous metals. 4,542,048, Cl. 427-380.000.

Niebylski, Leonard M.: *See*—
Zaweski, Edward F.; and Niebylski, Leonard M., 4,541,838, Cl. 44-57.000.

Niemann, Gary O. Apparatus for obtaining a random sample. 4,541,290, Cl. 73-863.910.

Niinomi, Tatsuya; and Matsumo, Yoshio, to Hitachi, Ltd. Assembling or processing system. 4,541,770, Cl. 414-730.000.

Nike, Inc.: *See*—
Mulvihill, Richard J., 4,541,186, Cl. 36-114.000.

Niki, Katsumi; Inokuchi, Hiroo; Yagi, Tatsuhiko; and Nakamura, Asao, to Ajinomoto Company Incorporated. Heme protein immobilized electrode and its use. 4,541,908, Cl. 204-101.000.

Nipon Pillar Packing Co., Ltd.: *See*—
Ogawa, Takahisa; and Aritsubo, Hirofumi, 4,541,638, Cl. 277-9.000.

Nippon Brown Coal Liquefaction Co., Ltd.: *See*—
Hirokoh, Nobuyoshi; Kageyama, Yoichi; Nakako, Yukio; and Matsumura, Tetsuo, 4,541,914, Cl. 208-10.000.

Nippon Electric Co., Ltd.: *See*—
Fukumura, Yukio, 4,542,531, Cl. 455-76.000.
Ikeda, Hiroaki, 4,542,306, Cl. 307-443.000.
Ikeda, Hiroaki, 4,542,484, Cl. 365-205.000.
Sasage, Tsutomu; Yoshida, Tomohisa; and Yoshida, Toshio, 4,541,624, Cl. 271-12.000.
Shimoyama, Haruo; Ohshima, Toshio; Nomoto, Shinobu; Hiraoka, Makoto; and Hanabata, Toshio, 4,542,406, Cl. 358-141.000.

Nippon Formula Feed Manufacturing Co. Ltd.: *See*—
Nakajima, Taiji; Togawa, Tsuneo; and Koike, Masao, 4,542,031, Cl. 426-307.000.

Nippon Kayaku Kabushiki Kaisha: *See*—
Odani, Junji; and Watanabe, Shigeyuki, 4,542,208, Cl. 534-797.000.
Tashiro, Yasuhisa; and Aoki, Shigeru, 4,542,236, Cl. 562-401.000.

Nippon Mining Co., Ltd.: *See*—
Matsunaga, Atsushi; Kusayanagi, Sampo; Takano, Masamitu; and Kato, Yutaka, 4,542,246, Cl. 585-6.600.

Nippon Notion Kogyo Co., Ltd.: *See*—
Watanabe, Hirokazu, 4,541,148, Cl. 24-108.000.

Nippon Seiko Kabushiki Kaisha: *See*—
Hatano, Junichi, 4,541,743, Cl. 384-576.000.

Nippon Telegraph & Telephone Public Corporation: *See*—
Akazawa, Yukio; Ishihara, Noboru; and Ohara, Mamoru, 4,542,350, Cl. 330-293.000.
Shimoyama, Haruo; Ohshima, Toshio; Nomoto, Shinobu; Hiraoka, Makoto; and Hanabata, Toshio, 4,542,406, Cl. 358-141.000.

Nippon Zeon Co Ltd: *See*—
Kitahara, Shizuo; Fujii, Toshihiro; and Sugi, Nagatoshi, 4,542,190, Cl. 525-332.600.

Nippondenso Co., Ltd.: *See*—
Hosoe, Katsuharu; Takasu, Yasuhito; and Iwata, Toshiharu, 4,541,382, Cl. 123-425.000.

Nischwitz, Dieter: *See*—
Herchenbach, Wolfgang; and Nischwitz, Dieter, 4,541,151, Cl. 24-265.0WS.

Nishi, Yuzo: *See*—
Kato, Kazuaki; and Nishi, Yuzo, 4,542,363, Cl. 337-31.000.

Nishibe, Masami: *See*—
Yamai, Yoshihiro; Hamamoto, Hideo; and Nishibe, Masami, 4,542,448, Cl. 362-268.000.

Nishibe, Takashi: *See*—
Yokoyama, Shotaro; and Nishibe, Takashi, 4,542,289, Cl. 250-201.000.

Nishida, Hiroshi; and Haruna, Toshiyuki, to Hitachi, Ltd. Apparatus for reducing starting adhesion between a magnetic disc and flying head. 4,542,429, Cl. 360-103.000.

Nishida, Masamitsu: *See*—
Kato, Junichi; Yokotani, Yoichirou; Nishida, Masamitsu; and Ouchi, Hiromu, 4,542,107, Cl. 501-134.000.

Nishida, Masanori: *See*—
Awano, Shunya; Koseki, Kazusuke; and Nishida, Masanori, 4,541,264, Cl. 72-257.000.

Nishikawa, Sumio: *See*—
Suzuki, Tamotsu; Nishikawa, Sumio; and Tatsuta, Sumitaka, 4,542,093, Cl. 430-523.000.

Nishimiya, Ryuji; Tuchiya, Yoshimasa; and Chikaraishi, Takayo, to Nissan Motor Company, Limited; and Nissan Shatai Company, Limited. Sealing structure for an automotive vehicle with a sliding door. 4,541,201, Cl. 49-221.000.

Nishimura, Sadanori; and Kinoshita, Katsuharu, to Honda Giken Kogyo Kabushiki Kaisha. Apparatus for supplying hydraulic fluid to an hydraulic clutch. 4,541,515, Cl. 192-85.0AA.

Nishioka, Akira: *See*—
Takahashi, Hiroshi; Nishioka, Akira; Tokunaga, Fumihiro; Aotani, Yoshimasa; and Aono, Koichiro, 4,542,085, Cl. 430-158.000.

Nishioka, Takeshi; Nakamura, Akira; and Yabe, Kenji, to Toray Industries, Incorporated. Flame-retardant polyolefin foam. 4,542,164, Cl. 521-135.000.

Nishiuchi, Kihachiro: *See*—
Yamamoto, Osamu; Suda, Hideaki; Nishiuchi, Kihachiro; Izumi, Misao; and Ejima, Noriyoshi, 4,542,067, Cl. 428-237.000.

Nissan Motor Company, Limited: *See*—
Ebihara, Sakae; Tanizaki, Hiroyuki; Sato, Kazuma; and Kanazawa, Yuzo, 4,541,667, Cl. 297-64.000.
Hokusho, Hiroyasu; and Ebara, Yohji, 4,541,306, Cl. 74-713.000.
Ideta, Yasufumi; and Fujikawa, Tadashi, 4,541,791, Cl. 418-182.000.
Kobayashi, Kyoji; Kato, Masaru; and Fujisawa, Koichi, 4,542,325, Cl. 318-483.000.
Nishimiya, Ryuji; Tuchiya, Yoshimasa; and Chikaraishi, Takayo, 4,541,201, Cl. 49-221.000.
Sato, Kenichi; and Ohki, Yoshitaka, 4,541,396, Cl. 123-518.000.
Tanaka, Toshiaki, 4,541,375, Cl. 123-261.000.
Tokura, Naomi; and Hasegawa, Yoji, 4,541,239, Cl. 60-286.000.
Tomita, Kimio, 4,541,324, Cl. 91-392.000.
Yanai, Tokiyoshi; Yamaguchi, Hirotsugu; Fukino, Masato; and Aoyama, Yutaka, 4,541,499, Cl. 180-142.000.

Nissan Shatai Company, Limited: *See*—
Nishimiya, Ryuji; Tuchiya, Yoshimasa; and Chikaraishi, Takayo, 4,541,201, Cl. 49-221.000.

Nitto Boseki Co., Ltd.: *See*—
Yamamoto, Osamu; Suda, Hideaki; Nishiuchi, Kihachiro; Izumi, Misao; and Ejima, Noriyoshi, 4,542,067, Cl. 428-237.000.

Niwa, Toshio; Himeno, Kiyoshi; and Yoshihara, Junji, to Research Association Of Synthetic Dyestuffs. Heterocyclic monoazo dyes for polyester fibers. 4,542,207, Cl. 534-630.000.

NKG Insulators, Ltd.: *See*—
Kato, Kazuaki; and Nishi, Yuzo, 4,542,363, Cl. 337-31.000.

Noca, Joseph A.: *See*—
Frank, Robert G.; and Noca, Joseph A., 4,541,758, Cl. 408-1.0BD.

Nochumson, Samuel, to FMC Corporation. Polyacrylamide cross-linked with a polysaccharide resin as electrophoretic gel medium. 4,542,200, Cl. 526-238.200.

Noetzel, Siegfried: *See*—
Mauz, Otto; Sauber, Klaus; and Noetzel, Siegfried, 4,542,069, Cl. 428-402.000.

Nojima, Satoshi: *See*—
Takeyama, Akira; Tazaki, Kenshi; Nojima, Satoshi; Aritaka, Norihiro; and Mita, Teruyoshi, 4,542,496, Cl. 370-16.000.

Nolan, Richard H. Board game. 4,541,634, Cl. 273-271.000.

Nomoto, Shinobu: *See*—
Shimoyama, Haruo; Ohshima, Toshio; Nomoto, Shinobu; Hiraoka, Makoto; and Hanabata, Toshio, 4,542,406, Cl. 358-141.000.

Nomura, Etuzo: *See*—
Kawaguchi, Hideo; and Nomura, Etuzo, 4,541,347, Cl. 112-121.110.

Nomura, Hiroaki: *See*—
Hozumi, Motoo; Nomura, Hiroaki; and Yoshioka, Yoshio, 4,542,219, Cl. 546-22.000.

Nomura, Yoshihisa; Watanabe, Shingo; and Yamamoto, Shoichi, to Toyota Jidosha Kabushiki Kaisha; and Aisan Kogyo Kabushiki Kaisha. Diaphragm fluid pump. 4,541,788, Cl. 417-471.000.

Nonomura, Kinzo: *See*—
Irie, Hiroyuki; Ide, Susumu; Nonomura, Kinzo; Watanabe, Masanori; and Takesako, Yoshinobu, 4,542,322, Cl. 315-366.000.

Nonoyama, Makoto: *See*—
Nagashima, Masayoshi; Yamane, Hiroshi; Nonoyama, Makoto; and Tashiro, Tsuneo, 4,542,387, Cl. 346-76.0PH.

Norbar Torque Tools Limited: *See*—
Wise, Douglas F., 4,541,313, Cl. 81-478.000.

Nordson Corporation: *See*—
Boone, Jacob J.; and Stoudt, George W., 4,542,045, Cl. 427-236.000.

Noren, Tommy: *See*—
Aule, Olaf; and Noren, Tommy, 4,542,034, Cl. 426-522.000.

Norrgran, Daniel A., to Atlantic Richfield Company. Process for the sulfatization of non-ferrous metal sulfides. 4,541,993, Cl. 423-27.000.

North American Philips Consumer Electronics Corp.: *See*—
Say, Donald L., 4,542,318, Cl. 313-414.000.

North American Philips Corporation: *See*—
Arnold, Emil; and Singer, Barry M., 4,542,405, Cl. 358-111.000.
Cooper, Jeffrey L.; and Johnson, Brian C., 4,542,407, Cl. 358-120.000.
Newman, Wyatt S.; and Goldowsky, Michael P., 4,542,311, Cl. 310-13.000.

North Carolina State University: *See*—
Stadelmaier, Hans H.; and ElMasry, Nadia A., 4,541,877, Cl. 148-101.000.

Northern Telecom Limited: *See*—
Weirich, Andreas H., 4,542,516, Cl. 375-30.000.

Norton Company: *See*—
Rostoker, David, 4,541,842, Cl. 51-296.000.

Norton, John H. R.; Rebello, Peter R.; Kavonic, Clifford M.; and Stiff, Anthony J., to AECI Limited. Fuels. 4,541,835, Cl. 44-53.000.

Norton, John H. R.; Rebello, Peter R.; Kavonic, Clifford M.; and Stiff, Anthony J., to AECI Limited. Fuels. 4,541,837, Cl. 44-53.000.

Nothdurft, Heinz, to Robert Bosch GmbH. Fuel injection pump for internal combustion engines. 4,541,789, Cl. 417-498.000.

Novametrix Medical Systems, Inc.: *See*—
Parker, Dawood; and Delpy, David T., 4,541,901, Cl. 204-1.00T.

Nowak, David M. Method and means for spraying aggregates for fireproof insulation onto a substratum. 4,542,040, Cl. 427-196.000.

Noweck, Klaus: *See*—
Meyer, Arnold; and Noweck, Klaus, 4,542,113, Cl. 502-8.000.

Noyori, Masato; Saitou, Hiroyoshi; Sato, Masamitsu; and Kikuchi, Kiyoshi, to Agency of Industrial Science & Technology, The President of the. Information retrieval device. 4,542,477, Cl. 364-900.000.

Nozemack, Richard J.; Rudesill, John A.; Denton, Dean A.; and Feldwick, Raymond D., to W. R. Grace & Co. Catalyst manufacture. 4,542,118, Cl. 502-65.000.

NRM Corporation: *See*—
Zakic, Paul, 4,541,792, Cl. 425-143.000.

NSK-Warner K.K.: *See*—
Ono, Katsuyasu, 4,541,580, Cl. 242-107.40D.

NTN Toyo Bearing Co., Ltd.: *See*—
Tsushima, Noriyuki; and Hirose, Toshiharu, 4,541,157, Cl. 29-149.50C.

Numata, Satoshi: *See*—
Umemoto, Mitsumasa; Asano, Tamotsu; Nagata, Teruyuki; and Numata, Satoshi, 4,542,243, Cl. 568-636.000.

Nyitrai , Jozsef: *See*—
Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nyitrai , Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Visky nee Gombos, Zsuzsanna; and Barta nee Szalai, Gizella, 4,541,955, Cl. 260-330.900.

O. Dorries GmbH: *See*—
Banning, Jurgen, 4,541,896, Cl. 162-363.000.

Obayashi, Shigeji; Nakamura, Morio; Yamamoto, Takushi; and Fujikake, Masato, to Seitetsu Kagaku Co., Ltd. Water-absorbent resin having improved water-absorbency and improved water-dispersibility and process for producing same. 4,541,871, Cl. 106-197.200.

O'Brien, Philip W., to Minnesota Mining and Manufacturing Company. Method of making electrical connections between opposing metal foils having a flexible, insulating layer sandwiched therebetween. 4,541,559, Cl. 228-117.000.

Oce-Nederland B.V.: *See*—
Kampschreur, Rutgerus J. M., 4,541,709, Cl. 355-3.0TR.

Ochi, Shigeharu, to Fuji Photo Film Co., Ltd. Single gate line interlace solid-state color imager. 4,542,409, Cl. 358-212.000.

Oda, Ronald L.; and Sweeney, William T., to Conoco Inc. Slurry input device. 4,541,850, Cl. 55-204.000.

Odagawa, Kazuyoshi, to Canon Kabushiki Kaisha. Rolled paper holder. 4,541,582, Cl. 242-55.200.

Odaka, Yoshiyuki; Nakazato, Kouichi; and Tomita, Yoshifumi, to Hitachi, Ltd. Method of manufacturing cathode-ray tube. 4,542,038, Cl. 427-68.000.

Odani, Junji; and Watanabe, Shigeyuki, to Nippon Kayaku Kabushiki Kaisha. Disazo compounds for dyeing cellulosic fibers. 4,542,208, Cl. 534-797.000.

O'Dea, James D.; and Venable, Glen J., to General Motors Corporation. Carton unfolding apparatus. 4,541,827, Cl. 493-309.000.

Odegaard, Gary W.: *See*—
Tam, Jimmy W.; Odegaard, Gary W.; Scherer, William C.; and Lonneman, Alan P., 4,541,548, Cl. 222-48.000.

Odernheimer, Bernhard, to Bruker-Franzen Analytik GmbH. Method and device for the sampling of trace elements in gases, liquids, solids or in surface layers. 4,541,268, Cl. 73-23.000.

Oe, Hidemi; and Hayashi, Kiyotaka, to NEC Home Electronics Ltd.; and Honda Giken Kogyo Kabushiki Kaisha. Control system having a self-diagnostic function. 4,542,506, Cl. 371-9.000.

Oestreich, Ulrich: *See*—
Barfuss, Juergen; Oestreich, Ulrich; Schoeber, Gernot; and Schrey, Wolfgang, 4,541,686, Cl. 350-96.230.

Oetker, Max. Shuttering elements. 4,541,213, Cl. 52-309.170.

Officine Meccaniche Pavesi & C. S.p.A.: *See*—
Barrera, Giorgio, 4,541,170, Cl. 29-597.000.

Officine Savio Spa: *See*—
Luchi, Luciano; and Negri, Ettore, 4,541,253, Cl. 66-14.000.

Ogasawara, Terumi: *See*—
Arai, Masayuki; Ogasawara, Terumi; and Shikano, Tohru, 4,542,410, Cl. 358-228.000.

Ogata, Hajime; Ohashi, Yoshiharu; Tsugawa, Shunichi; Ichida, Toshio; and Irie, Toshio, to Kawasaki Steel Corporation. Tin-free steel sheets having improved lacquer adhesion. 4,542,077, Cl. 428-629.000.

Ogata, Terumi: *See*—
Sato, Mitomu; Nakatani, Toshikazu; Yamashita, Katsumi; and Ogata, Terumi, 4,541,145, Cl. 24-19.000.

Ogawa, Takahisa; and Aritsubo, Hirofumi, to Nipon Pillar Packing Co.. Ltd. Emergency shaft seal device by deformation of packing ring. 4,541,638, Cl. 277-9.000.
Ogihara, Toru: *See*—
Ito, Masahiko; and Ogihara, Toru, 4,541,154, Cl. 24-442.000.
Ogino, Hiroshi: *See*—
Kageyama, Minoru; Hirose, Takeo; Matsui, Tadao; Ogino, Hiroshi; Yoshida, Shiro; and Suzuki, Takayuki, 4,541,371, Cl. 123-65.0PE.
Ogino, Shigeru, to Toyota Jidosha Kabushiki Kaisha. Fuel injection control device for diesel engine. 4,541,392, Cl. 123-502.000.
Ohara, Mamoru: *See*—
Akazawa, Yukio; Ishihara, Noboru; and Ohara, Mamoru, 4,542,350, Cl. 330-293.000.
Ohashi, Yoshiharu: *See*—
Ogata, Hajime; Ohashi, Yoshiharu; Tsugawa, Shunichi; Ichida, Toshio; and Irie, Toshio, 4,542,077, Cl. 428-629.000.
Ohio State University Research Foundation, The: *See*—
Kuwana, Theodore; and Kao, Wen-Hong, 4,541,905, Cl. 204-38.700.
Witiak, Donald T.; and Rahwan, Ralf G., 4,542,153, Cl. 514-466.000.
Ohkawara Kakohki Kabushiki Kaisha: *See*—
Kijima, Shoichiro; and Ohkawara, Masaaki, 4,541,566, Cl. 239-224.000.
Ohkawara, Masaaki: *See*—
Kijima, Shoichiro; and Ohkawara, Masaaki, 4,541,566, Cl. 239-224.000.
Ohki, Nobutaka; Tsubota, Motohiko; Morigaki, Masakazu; and Hamaoka, Tsutomu, to Fuji Photo Film Co., Ltd. Color diffusion transfer element with hydroquinone type compound. 4,542,086, Cl. 430-218.000.
Ohki, Yoshitaka: *See*—
Sato, Kenichi; and Ohki, Yoshitaka, 4,541,396, Cl. 123-518.000.
Ohmachi, Kazuhiko: *See*—
Kitajima, Hiroyuki; Ohmachi, Kazuhiko; Doki, Mitsuru; Kazama, Junichi; and Kanao, Hidekazu, 4,542,458, Cl. 364-200.000.
Ohshima, Toshio: *See*—
Shimoyama, Haruo; Ohshima, Toshio; Nomoto, Shinobu; Hiraoka, Makoto; and Hanabata, Toshio, 4,542,406, Cl. 358-141.000.
Ohsugi, Katsuhisa; Ichida, Junji; and Takahashi, Eisaku, to Kureha Kagaku Kogyo Kabushiki Kaisha. Antibiotic compound. 4,542,154, Cl. 514-475.000.
Ohta, Yoshihiko, to Victor Company of Japan, Ltd. Video signal magnetic recording and reproducing system. 4,542,417, Cl. 360-9.100.
Ohtani, Masaaki; Harada, Takao; Oyaizu, Yoshijiro; and Kobayashi, Tatsuhiko, to Mitsubishi Chemical Industries Ltd.; and Ihara Chemical Industry Co., Ltd. Process for adhering polyurethane elastomer to metal. 4,542,070, Cl. 428-416.000.
Oie, Naoyuki; Koyama, Hiromichi; and Takegawa, Takafumi, to Sanyo Electric Co., Ltd. Air-purifying apparatus. 4,541,847, Cl. 55-124.000.
Okabe, Sigeru: *See*—
Takeuchi, Masato; Tobita, Hiroshi; Okabe, Sigeru; Okada, Hideo; and Tonami, Munehiko, 4,542,079, Cl. 429-39.000.
Okada, Hideo: *See*—
Takeuchi, Masato; Tobita, Hiroshi; Okabe, Sigeru; Okada, Hideo; and Tonami, Munehiko, 4,542,079, Cl. 429-39.000.
Okada, Hiroshi: *See*—
Honma, Katsuhiko; Tatsuno, Tsuneo; and Okada, Hiroshi, 4,541,975, Cl. 264-62.000.
Okada, Tomoo, to Kabushiki Kaisha Universal. Device for detecting the amount of coins in hopper device. 4,541,444, Cl. 133-4.00A.
Okada, Toshiro, to Fujitsu Limited. PLL for regenerating a synchronizing signal from magnetic storage. 4,542,351, Cl. 331-11.000.
Okado, Takeshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Ultrasonic scanning apparatus. 4,541,434, Cl. 128-660.000.
Okamura, Shozo: *See*—
Okane, Kohji; Nakajima, Hidemasa; Okamura, Shozo; Sueyasu, Masanobu; and Manago, Takashi, 4,541,617, Cl. 266-65.000.
Okane, Kohji; Nakajima, Hidemasa; Okamura, Shozo; Sueyasu, Masanobu; and Manago, Takashi, to Sumitomo Metal Industries. Lance structure for oxygen-blowing process in top-blown converters. 4,541,617, Cl. 266-65.000.
OKI Electric Industry Co., Ltd.: *See*—
Mitani, Tokiyoshi, 4,542,263, Cl. 179-81.00B.
Okumura, Ryuichi; Dohi, Hidemi; and Togawa, Shingo, to Sanyo Electric Co., Ltd.; and Tottori Sanyo Electric Co., Ltd. Serial printer with ink roller. 4,541,748, Cl. 400-470.000.
Olin Corporation: *See*—
Butt, Sheldon H., 4,542,259, Cl. 174-52.0FP.
Capuano, Italo A.; and DeFelice, Diane L., 4,542,008, Cl. 423-477.000.
Spooner, Thomas H., 4,542,218, Cl. 544-190.000.
Olivieri, Oliviero, to Icaro Olivieri & C. S.p.A. Ski-boot fastening device with an adjustable-length tie rod for varying the tension of the fastening under load. 4,541,147, Cl. 24-68.0SK.
Olschewski, Armin; Laszlofalvi, Zoltan; and Kunkel, Heinrich, to SKF Kugellagerfabriken GmbH. Universal joint. 4,541,818, Cl. 464-134.000.
Olsen, Robert A., to Sybron Corporation. Swivel hose coupling for dental handpiece or the like. 4,541,802, Cl. 433-126.000.
Olson, Elwyn H., to Honeywell Inc. Electromagnetic relay having dual acting armature. 4,542,360, Cl. 335-203.000.
Olympus Optical Co., Ltd.: *See*—
Fujibayashi, Kenji, 4,542,421, Cl. 360-67.000.
Kimura, Kenji, 4,542,415, Cl. 358-342.000.
Omega SA: *See*—
Baumgartner, Louis; and Meylan, Philippe, 4,541,725, Cl. 368-37.000.
Tu Xuan, Mai, 4,542,329, Cl. 318-696.000.
OMI International Corporation: *See*—
Martin, Sylvia, 4,541,906, Cl. 204-55.00R.
OMM Officine Meccanotessili Monza S.p.A.: *See*—
Reiter, Josef, 4,541,458, Cl. 139-55.100.
Ona, Isao; and Ozaki, Masaru, to Toray Silicone Company, Ltd. Method and siloxane composition for treating fibers. 4,541,936, Cl. 252-8.600.
Ono, Hiromi; and Inoue, Takemi, to Kawasaki Jukogyo Kabushiki Kaisha. Water jet propulsion system. 4,541,808, Cl. 440-42.000.
Ono, Katsuyasu, to NSK-Warner K.K. Automatic locking retractor. 4,541,580, Cl. 242-107.40D.
Ono, Kazuo: *See*—
Nakazawa, Yuzo; Ono, Kazuo; Tanaka, Masaki; Morita, Takao; and Kurosaki, Takefumi, 4,542,356, Cl. 333-195.000.
Ono, Kensaku: *See*—
Iwakura, Mitsuo; Takahashi, Toru; and Ono, Kensaku, 4,542,339, Cl. 324-121.00R.
Ono, Satoshi; Sugita, Hiroshi; and Hiramitsu, Tetsushi, to Toyoda Gosei Co., Ltd. Steering wheel. 4,541,301, Cl. 74-484.00R.
Ono, Taizo: *See*—
Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; Inoue, Yoshihisa; Naito, Youichiro; and Suyama, Tadakazu, 4,542,147, Cl. 514-411.000.
Ono, Toyoichi: *See*—
Sato, Fumihide; and Ono, Toyoichi, 4,541,393, Cl. 123-502.000.
Onoe, Yoshinori; Takagi, Hiroshi; Ikenaga, Satoru; Tsuchiya, Hiraku; Murakami, Shohei; and Nakao, Masakazu, to Kabushiki Kaisha Kobe Seiko Sho. Apparatus for spraying an air-water mist cooling for use in continuous metal casting. 4,541,473, Cl. 164-444.000.
Onomori Iron Works Co., Ltd.: *See*—
Arashi, Masahiro, 4,541,255, Cl. 68-22.00R.
Onuki, Jin: *See*—
Yatsuo, Tsutomu; Naito, Masayoshi; Nagano, Takahiro; Yasuda, Tomio; Onuki, Jin; Yanagi, Mitsuo; and Sato, Fumio, 4,542,398, Cl. 357-38.000.
Ooka, Akihiro: *See*—
Satoh, Koji; Ooka, Akihiro; and Wada, Yutaka, 4,542,526, Cl. 382-13.000.
Optical Storage International: *See*—
Howard, P. Guy; and Hekker, Roeland M. T., 4,541,689, Cl. 350-255.000.
Ord, Richard N.: *See*—
Reynolds, Keith B.; Freston, Trevor R.; Ord, Richard N.; and Houghton, James T., 4,541,757, Cl. 407-53.000.
Ore-Ida Foods, Inc.: *See*—
Haury, John F.; and Hensley, Charles T., 4,542,030, Cl. 426-262.000.
O'Reilly, Hugh T. Selectively extensible chute assembly. 4,541,517, Cl. 193-4.000.
Orentreich, Norman. DHEA Formulations and methods for treating dry skin. 4,542,129, Cl. 514-178.000.
Organon Teknika B.V.: *See*—
Smakman, Robert; and van den Berg, Gerrit H., 4,542,015, Cl. 424-79.000.
Orii, Toshio, to Kabushiki Kaisha Suwa Seikosha. Electronic memoranda device for storing, retrieving, and displaying a schedule of data in records. 4,542,480, Cl. 364-900.000.
Orwin, Olaf J. B.: *See*—
Beasant, Andrew J.; Orwin, Olaf J. B.; and Fortune, David J., 4,541,512, Cl. 192-56.00R.
Osada, Hisajiro; Hiratsuka, Yutaka; and Watanabe, Masahiro, to Hitachi, Ltd. Plasma monitoring method and plasma monitor. 4,541,718, Cl. 356-316.000.
Osann, Edward W., Jr.: *See*—
Morgenstern, Robin; and Osann, Edward W., Jr., 4,541,670, Cl. 297-284.000.
Osawa, Masakazu. Surgical corset. 4,541,419, Cl. 128-78.000.
Oshizawa, Hidekazu; and Fujimori, Kyoichi, to Diesel Kiki Co., Ltd. Electronically controlled fuel injection apparatus. 4,541,380, Cl. 123-357.000.
Osterloh, Rolf: *See*—
Schupp, Eberhard; Loch, Werner; Osterloh, Rolf; and Ahlers, Klaas, 4,542,173, Cl. 523-414.000.
Schupp, Eberhard; Loch, Werner; Osterloh, Rolf; and Ahlers, Klaas, 4,542,193, Cl. 525-490.000.
Otte, Werner: *See*—
Dorffel, Jorg; Lange, Erhard; Otte, Werner; and Heinrich, Friedrich, 4,542,194, Cl. 525-521.000.
Ouchi, Hiromu: *See*—
Kato, Junichi; Yokotani, Yoichirou; Nishida, Masamitsu; and Ouchi, Hiromu, 4,542,107, Cl. 501-134.000.
Owen, Wickersham & Erickson, P.C.: *See*—
Lindberg, John E., 4,541,367, Cl. 123-25.00M.
Owens-Corning Fiberglas Corporation: *See*—
Calvert, Scott A.; Gelin, Robert J.; and Aberegg, Dale, 4,541,130, Cl. 4-593.000.
Gano, Barclay P.; and Rucker, James L., 4,542,044, Cl. 427-215.000.
Sullivan, Timothy A.; Morgan, Gregory L.; and Warner, Arthur S., 4,541,853, Cl. 65-12.000.
Owens, Joe M., to Master Consolidated Corporation. Surface spreader with column bypass. 4,541,750, Cl. 404-110.000.

Oxytech, Inc.: *See*—
Foller, Peter C., 4,541,989, Cl. 422-186.070.
Oy Tampella AB: *See*—
Karna , Anssi; and Liimatainen, Heikki, 4,541,571, Cl. 241-28.000.
Oyafuso, Harry H., to Ford Motor Company. Shock absorbing motor gear. 4,541,296, Cl. 74-425.000.
Oyaizu, Yoshijiro: *See*—
Ohtani, Masaaki; Harada, Takao; Oyaizu, Yoshijiro; and Kobayashi, Tatsuhiko, 4,542,070, Cl. 428-416.000.
Oyama, Akira, to Alps Electric Co., Ltd. Illuminated variable resistor. 4,542,366, Cl. 338-196.000.
Oyster Tent Company: *See*—
Ferguson, Robert W., 4,541,445, Cl. 135-106.000.
Ozaki, Masaru: *See*—
Ona, Isao; and Ozaki, Masaru, 4,541,936, Cl. 252-8.600.
Ozawa, Hitoshi: *See*—
Hosoi, Kazuo; and Ozawa, Hitoshi, 4,541,952, Cl. 260-112.00R.
P. Robertet & Cie [Societe Anomyme]: *See*—
Joulain, Daniel R., 4,541,948, Cl. 252-522.00R.
Pace, Paul W.; Mathieu, Pierre R.; and Cruickshank, James M., to Canada, Her Majesty the Queen in right of. Preionizing arrangement for transversely excited lasers. 4,542,529, Cl. 372-86.000.
Palameta, Bozidar: *See*—
Bagli, Jehan; Bogri, Tibor; Palameta, Bozidar; and Borella, Luis E., 4,542,140, Cl. 514-332.000.
Palau, Joseph, to S.A. Des Etablissements Staubli (France). Hooking device for the semi-automatic connection of the heddle frames of weaving looms with the levers for controlling them. 4,541,459, Cl. 139-88.000.
Palazzolo, Francis V.; and Polachowski, Wayne T., to Custom Automation, Inc. Material flow rail. 4,541,518, Cl. 193-35.00A.
Pallanza, Rosa: *See*—
Borghi, Angelo; Pallanza, Rosa; Coronelli, Carolina; and Cassani, Giovanni, 4,542,018, Cl. 424-119.000.
Palmer, David N., to Combustion Engineering, Inc. Getter-lubricant coating for nuclear fuel elements. 4,541,984, Cl. 376-415.000.
Palmer, David N., to Combustion Engineering, Inc. Synthesis of intercalatable layered stable transition metal chalcogenides and alkali metal-transition metal chalcogenides. 4,542,009, Cl. 423-561.00R.
Panetti, Romolo, to Speno International S.A. Measuring device of the transverse profile of the head of a rail. 4,541,182, Cl. 33-560.000.
Paoluccio, John A. Liquid dispensing apparatus. 4,541,363, Cl. 119-77.000.
Papst Motoren GmbH & Co KG: *See*—
Doemen, Benno, 4,542,323, Cl. 318-254.000.
Paradis, Roland C., to Perkin-Elmer Corporation, The. Solvent pressurization system. 4,541,452, Cl. 137-209.000.
Park Poultry, Inc.: *See*—
Hawk, Theodore L., 4,541,661, Cl. 293-117.000.
Park Tool Company: *See*—
Schlough, Thomas L., 4,541,405, Cl. 125-23.00R.
Parker, Alvin S. Clip for attaching sheets of wall material to columns and other structural members. 4,541,219, Cl. 52-713.000.
Parker, Dawood; and Delpy, David T., to Novametrix Medical Systems, Inc. Method and apparatus for zero calibration of oxygen-sensing polarographic devices. 4,541,901, Cl. 204-1.00T.
Parker, James S., to General Electric Company. Tuning system with automatic frequency control. 4,542,533, Cl. 455-182.000.
Parker, John G.; and Standbro, William D., to Johns Hopkins University, The. Localization of cancerous tissue by monitoring infrared fluorescence emitted by intravenously injected porphyrin tumor-specific markers excited by long wavelength light. 4,541,438, Cl. 128-664.000.
Parnell, Edgar W.: *See*—
Hatton, Leslie R.; Parnell, Edgar W.; and Roberts, David A., 4,541,963, Cl. 260-465.00E.
Parr, Ehrfried: *See*—
Strack, Hans; Kleinschmit, Peter; and Parr, Ehrfried, 4,542,115, Cl. 502-64.000.
Parsonnet, Victor, to Cordis Corporation. Bipolar epicardial temporary pacing lead. 4,541,440, Cl. 128-785.000.
Partridge, Randall D.: *See*—
LaPierre, Rene B.; and Partridge, Randall D., 4,541,919, Cl. 208-111.000.
Parviainen, Arno. Weight lifting type exercise device. 4,541,628, Cl. 272-134.000.
Pasto, Arvid E., to GTE Laboratories Incorporated. Silicon nitride-cordierite ceramic article, and process of manufacture thereof. 4,542,109, Cl. 501-97.000.
Patel, Dahyabhai C., to Astec Europe Limited. Electrical converter including gain enhancing means for low gain transistors. 4,542,450, Cl. 363-23.000.
Patrello, Joseph, to United Abrasives, Inc. Abrasive wheel assembly. 4,541,205, Cl. 51-168.000.
Patrick, Michael J.; and Snider, David M., to Texas Instruments Incorporated; and International Business Machines Corporation. Program patching in microcomputer. 4,542,453, Cl. 364-200.000.
Patterson, Michael A.: *See*—
Newton, Charles L.; Stuber, Wayne G.; and Patterson, Michael A., 4,541,852, Cl. 62-11.000.
Patterson, Waldo C.: *See*—
Benzing, William M.; Patterson, Waldo C.; and Cadle, Lawrence C., 4,542,487, Cl. 367-31.000.
Paul Revere Corporation, The: *See*—
Rieke, David M.; and Pingry, Larry J., 4,541,570, Cl. 239-676.000.
Pavel, Klaus, to Rhein-Nadel Maschinennadel GmbH. Method of producing sewing machine needles. 4,541,470, Cl. 163-5.000.
Pavincic, Ivan. Two wheel skating device. 4,541,643, Cl. 280-11.210.
Payhauler Corporation: *See*—
Eldridge, Joseph L.; and Domes, E. A., 4,542,461, Cl. 364-424.000.
Payne, George B.; Soloway, Samuel B.; Powell, James E.; Roman, Steven A.; and Kollmeyer, Willy D., to Shell Oil Company. Oxabicycloalkane herbicides. 4,542,244, Cl. 568-825.000.
Payne, Virgil L.; and Mauldin, Charles H., to Exxon Research and Engineering Co. Cobalt catalysts for the preparation of hydrocarbons from synthesis gas and from methanol. 4,542,122, Cl. 502-325.000.
Payne, William H. Fluid power transmission. 4,541,513, Cl. 192-58.00R.
Pearce, David W., to GEC Avionics Limited. Encapsulated assemblies. 4,542,260, Cl. 174-52.0PE.
Peart, Whitcomb S.; and Baldvins, Jon O., to Markem Corporation. Process for forming permanent images using carrier supported inks containing sublimable dyes. 4,541,340, Cl. 101-470.000.
Pecci, Michel, to Castolin S.A. Process for manufacturing a moulding plunger for hollow glass objects. 4,541,474, Cl. 164-46.000.
Peck, Douglas J.: *See*—
Spigarelli, Donald J.; Peck, Douglas J.; Hall, Walter J.; and Finney, James L., 4,541,358, Cl. 118-58.000.
Peers-Trevarton, Charles A.: *See*—
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Pegg Whiteley Limited: *See*—
Walsh, Ray P.; and Smith, David H., 4,541,156, Cl. 26-81.000.
Pellatt, Martin G.: *See*—
Gray, George W.; Lacey, David; Pellatt, Martin G.; and Sturgeon, Bennett, 4,542,230, Cl. 560-01.000.
Penick, Joe E.: *See*—
Chang, Clarence D.; Penick, Joe E.; and Socha, Richard F., 4,542,247, Cl. 585-254.000.
Penlon Limited: *See*—
Smith, Brendan E., 4,541,966, Cl. 261-27.000.
Perceptron, Inc.: *See*—
Dewar, Robert, 4,541,721, Cl. 356-375.000.
Pereira, Carmo J.; Hegedus, Louis; and Maselli, James M., to W. R. Grace & Co. Process for utilizing catalyst with high geometric surface area. 4,541,996, Cl. 423-213.500.
Pereira, Carmo J.: *See*—
Kim, Gwan; Pereira, Carmo J.; Hegedus, Louis; and Maselli, James M., 4,541,995, Cl. 423-213.500.
Perez, Joaquin P.: *See*—
Corma, Avelino C.; Mifsud, Amparo C.; and Perez, Joaquin P., 4,542,002, Cl. 423-331.000.
Perga, Giampiero: *See*—
Guagliumi, Renato; and Perga, Giampiero, 4,541,284, Cl. 73-730.000.
Periou, Pierre; and Dauvergne, Jean, to Compagnie Industrielle de Mecanismes. Latch, in particular for an automobile vehicle door. 4,541,258, Cl. 70-263.000.
Perkin-Elmer Corporation, The: *See*—
Paradis, Roland C., 4,541,452, Cl. 137-209.000.
Perkins, Warren E., to $CRYO_2$ Corporation. Contents gage. 4,541,276, Cl. 73-296.000.
Perretta, Frederick A., to United Technologies Corporation. Card guide. 4,542,441, Cl. 361-412.000.
Person, Dennis W.; Pierce, Stanley L.; and Liang, Polung, to Ford Motor Company. Hydraulic control system for electronic transmission control. 4,541,308, Cl. 74-868.000.
Petersen, Christian, to Petersen Manufacturing Co., Inc. Long nose locking plier. 4,541,312, Cl. 81-367.000.
Petersen, Gunnar C. Apparatus for packaging portions of elongate articles. 4,541,228, Cl. 53-572.000.
Petersen Manufacturing Co., Inc.: *See*—
Petersen, Christian, 4,541,312, Cl. 81-367.000.
Petit, Pierre: *See*—
Bosquain, Maurice; Grenier, Maurice; Hay, Leon; Lapeyre, Paul; Lehman, Jean-Yves; Petit, Pierre; and Sauty, Pierre, 4,541,851, Cl. 55-208.000.
Petrolite Corporation: *See*—
Naiman, Michael I.; and Schield, John A., 4,541,839, Cl. 44-62.000.
Pettigrew, Robert M.: *See*—
Wainwright, Ronald C.; Goy, Nicholas M.; Anderson, John D.; Pettigrew, Robert M.; and Bradbrook, John D., 4,541,695, Cl. 350-429.000.
Peytavin, Pierre, to Vallourec S.A. Process for cold rolling of tubes by means of a pilger mill and device for using the process. 4,541,262, Cl. 72-214.000.
Pfefferkorn, Dietmar: *See*—
Stumpfi, Werner; Bettinger, Gunter; Engel, Friedrich; Fitterer, Horst; Kreimes, Norbert; Pfefferkorn, Dietmar; Schaffer, Norbert; and Schmidts, Kurt, 4,541,587, Cl. 242-197.000.
Pfeiffer, Peter: *See*—
Gallitzendorfer, Josef; Gotz, Hans; Pfeiffer, Peter; and Tomforde, Johann, 4,541,664, Cl. 296-213.000.
Pfister GmbH: *See*—
Hafner, Hans W., 4,541,285, Cl. 73-744.000.
Pfister, Theodor; Eue, Ludwig; Schmidt, Robert R.; and Hanssler, Gerd, to Bayer Aktiengesellschaft. Chlorinated phosphorylmethylcarbonyl derivative plant protection agents. 4,541,858, Cl. 71-86.000.
Pfizer Inc.: *See*—
Campbell, Simon F.; Jaxa-Chamiec, Albert A.; and Roberts, David A., 4,542,132, Cl. 514-222.000.

Pfluger, Rudolf W., to Ciba Geigy Corporation. Process for producing fluoroalkoxyaminopyrimidines. 4,542,216, Cl. 544-320.000.

Phelps, W. Howard. Snowblower apparatus. 4,541,187, Cl. 37-251.000.

Philbrick, Herbert S., Jr.: *See*—
Finkl, Charles W.; Lehman, Albert L.; and Philbrick, Herbert S., Jr., 4,541,862, Cl. 75-12.000.

Phillips, Gary M.; and Benjamin, Albert S., to Medtronic, Inc. Filling system for hermetically sealed batteries. 4,542,080, Cl. 429-174.000.

Phillips, Glen R.: *See*—
Brandyberry, Robert E.; Forbes, Mark M.; Gloyeski, David D.; Greafnitz, Russell F.; Phillips, Glen R.; Straw, Robert L.; Stricker, Kevin L.; Szabela, William A.; Webeck, Richard R.; Mayfield, Glenn A.; and Vollmer, William L., 4,542,469, Cl. 364-483.000.

Phillips, John T., to GHD-Dwyer (WA) Pty. Ltd. Disposal of fine tailings. 4,541,752, Cl. 405-129.000.

Phillips Petroleum Company: *See*—
Gray, Roy A.; and Macdonell, Gary D., 4,542,241, Cl. 568-62.000.
Jack, Douglas S.; and Garner, James W., 4,541,938, Cl. 252-33.000.
Jack, Douglas S., 4,541,939, Cl. 252-33.000.
Murray, Lawrence K., 4,542,007, Cl. 423-450.000.
Reusser, Robert E., 4,542,249, Cl. 585-329.000.
Spence, J. Ronald, 4,541,940, Cl. 252-33.000.
Stapp, Paul R., 4,541,918, Cl. 208-87.000.
Wu, Yulin, 4,541,489, Cl. 166-312.000.

Phillips, Robert J. Eyeglasses apparatus, and methods of constructing and utilizing same. 4,541,125, Cl. 2-10.000.

Piccolo, Oreste; Belli, Aldo; Villa, Giovanni; Zen, Enrico; and Citterio, Attilio, to Biaschim S.p.A. Process for preparing biaryl compounds via coupling of an arylamine with an arene. 4,542,233, Cl. 560-21.000.

Pichon, Michel: *See*—
Maillard, Alain; and Pichon, Michel, 4,541,856, Cl. 65-29.000.

Pierce, Stanley L.: *See*—
Person, Dennis W.; Pierce, Stanley L.; and Liang, Polung, 4,541,308, Cl. 74-868.000.

Pierrel, Michel: *See*—
Fort, Pierre; and Pierrel, Michel, 4,541,477, Cl. 164-302.000.

Pillsbury Company, The: *See*—
Huang, Victor T.; Colson, Cynthia A.; Yong, Sam; and Clemmings, John F., 4,542,035, Cl. 426-565.000.

Pingry, Larry J.: *See*—
Rieke, David M.; and Pingry, Larry J., 4,541,570, Cl. 239-676.000.

Pinnington, Arthur J.: *See*—
Cooke, Edward I.; Pinnington, Arthur J.; and Smeatham, Charles A., 4,541,979, Cl. 264-174.000.

Pioneer Electronic Corporation: *See*—
Nagai, Kiichirou, 4,542,427, Cl. 360-72.100.
Shimizu, Katsuhisa; and Magata, Yoshihiro, 4,542,490, Cl. 369-6.000.

Pirlet, Robert A., to Centre de Recherches Metallurgiques-Centrum Voor Research in de Metallurgie. Monitoring the planarity of metal sheet. 4,541,723, Cl. 356-376.000.

Pitchford, A. H. Apparatus for increasing vehicle mobility. 4,541,498, Cl. 180-9.260.

Pitney Bowes Inc.: *See*—
Govan, Edward; and Irvine, Robert, 4,541,764, Cl. 414-52.000.

Pivotto, Bruno: *See*—
Giannini, Umberto; Longi, Paolo; Deluca, Domenico; and Pivotto, Bruno, 4,542,197, Cl. 526-125.000.

Plessey Overseas Limited: *See*—
Goodfellow, Robert C.; and Harding, Malcolm E., 4,542,511, Cl. 372-46.000.

Plotkin, Neil D.: *See*—
Lowery, James J.; Plotkin, Neil D.; and Robinson, Jack, 4,541,981, Cl. 264-209.100.

Plunkett, Thomas H.: *See*—
Nickloy, Charles H.; and Plunkett, Thomas H., 4,541,215, Cl. 52-479.000.

PMT, Inc.: *See*—
Iversen, Alfred A.; and Eastman, William J., 4,541,421, Cl. 128-87.00B.

Polachowski, Wayne T.: *See*—
Palazzolo, Francis V.; and Polachowski, Wayne T., 4,541,518, Cl. 193-35.00A.

Polaroid Corporation: *See*—
Cronin, David V., 4,541,701, Cl. 354-324.000.
Erikson, Herman E., 4,542,523, Cl. 378-167.000.
Freeman, William T., 4,541,704, Cl. 354-432.000.

Polic, Georg, to Bobst S.A. Tool support with an arrangement for centering and fixing a tool therein. 4,541,828, Cl. 493-468.000.

Pollack, Gordon P.: *See*—
Havemann, Robert H.; and Pollack, Gordon P., 4,541,167, Cl. 29-576.00W.

Pollick, Michael L.: *See*—
Case, Allen W., Jr.; Ringwall, Carl G.; and Pollick, Michael L., 4,542,279, Cl. 219-124.340.

Polymer Engineering Inc.: *See*—
Tanonis, David R.; and Darbut, Alexander L., 4,542,271, Cl. 219-10.55E.

Pont-A-Mousson S.A.: *See*—
Barbe, Pierre L. C. C., 4,541,613, Cl. 251-326.000.
Fort, Pierre; and Pierrel, Michel, 4,541,477, Cl. 164-302.000.
Fuminier, Claude, 4,541,316, Cl. 82-59.000.

Popp, Karl F.: *See*—
Gorman, William G.; Popp, Karl F.; Galloway, Jennifer C.; and Sedlock, David M., 4,542,125, Cl. 514-57.000.

Posselt, Klaus: *See*—
Engel, Jurgen; Kleemann, Axel; Posselt, Klaus; Stroman, Fritz; and Thiemer, Klaus, 4,542,159, Cl. 514-653.000.

Post, Thomas A.: *See*—
Borowski, Stanley J.; and Post, Thomas A., 4,541,954, Cl. 260-239.0BB.

Potapkin, Viktor F.; Morozov, Igor A.; Fedorinov, Vladimir A.; and Ravich, Alexandr S., to Kramatorsky Industrialny Institut. Roll mill stand. 4,541,263, Cl. 72-243.000.

Potzas, Peter, to USM Corporation. Pipe clip. 4,541,602, Cl. 248-544.000.

Pouyet, Jean, to Etablissements Lemoin & Cie. Process for acquiring data representative of the shape of an object. 4,542,328, Cl. 318-573.000.

Powell, Fred D., to Simmonds Precision Products, Inc. Method and apparatus for sampling broad band spectra in fuel quantity measurement systems. 4,542,336, Cl. 324-77.00B.

Powell, James E.: *See*—
Payne, George B.; Soloway, Samuel B.; Powell, James E.; Roman, Steven A.; and Kollmeyer, Willy D., 4,542,244, Cl. 568-825.000.

Powell, Richard L., to Imperial Chemical Industries PLC. Heat pumps. 4,541,943, Cl. 252-67.000.

PPG Industries, Inc.: *See*—
Frank, Robert G.; and Noca, Joseph A., 4,541,758, Cl. 408-1.0BD.
Gaa, Peter C., 4,542,065, Cl. 428-391.000.
Koontz, Harry S., 4,542,333, Cl. 324-52.000.
Sproull, James F., 4,542,106, Cl. 501-38.000.

Precision Monolithics, Inc.: *See*—
Hoeft, Werner H., 4,542,349, Cl. 330-279.000.

Precision Strip Technology, Inc.: *See*—
Eiting, John C., 4,541,163, Cl. 29-426.500.

President and Fellows of Harvard College: *See*—
Leder, Philip, 4,542,096, Cl. 435-6.000.

Press, Jeffery B.: *See*—
Wright, William B., Jr.; Press, Jeffery B.; and Tomcufcik, Andrew S., 4,542,145, Cl. 514-383.000.

Price, Ronald K. Portable intravenous pole for use in an emergency. 4,541,596, Cl. 248-125.000.

Prinz, Bruno: *See*—
Muhlberger, Horst; Prinz, Bruno; Wunder, Wolf; Schafer, Ulrich; and Bognar, Josef, 4,541,878, Cl. 148-139.000.

Priscu, John C.: *See*—
Neelameggham, Ramaswami; Abedi, Hedayat; Priscu, John C.; and Legge, Michael H., 4,541,867, Cl. 75-58.000.

Procyk, Frank J., to AT&T Bell Laboratories. Dual stage sense amplifier for dynamic random access memory. 4,542,483, Cl. 365-190.000.

Professional Packaging Limited: *See*—
Holmes, Gordon W., 4,541,528, Cl. 206-0.820.

Profile Management Services, Inc.: *See*—
Dehls, Allan W., 4,541,362, Cl. 119-51.00R.

Proprietary Technology, Inc.: *See*—
Bartholomew, Donald D., 4,541,658, Cl. 285-319.000.

Prosl, Frank R.; Skakoon, James G.; Carlozzi, Gerard S.; and Infusaid Corporation. Implantable magnetically-actuated valve. 4,541,429, Cl. 604-249.000.

Protective Treatments, Inc.: *See*—
Nevins, Norman; McVay, Robert L.; and Bellanca, Carmen L., 4,542,053, Cl. 428-48.000.

Pschera, Andreas: *See*—
Kosak, Wolfgang; Reischl, Rolf; and Pschera, Andreas, 4,541,389, Cl. 123-490.000.

Pudwill, Horst, to CEP Continental Engineering Products Co., Ltd. Vacuum cleaner. 4,541,142, Cl. 15-323.000.

Pujol, Yves. Automatic machine for binding products in accordance with a pre-established sequence. 4,541,660, Cl. 289-2.000.

Purcupile, John C., to University of Oklahoma, Board of Regents for the. Apparatus and method for monitoring and controlling a pump system for a well. 4,541,274, Cl. 73-151.000.

Purolator Products Inc.: *See*—
Dye, Richard G.; and Robichaud, Arthur W., 4,541,265, Cl. 72-349.000.

Quakenbush, Timothy L. Flashlight attachment for firearms. 4,542,447, Cl. 362-183.000.

Quick, Roy F., Jr.: *See*—
Bass, Leland J.; Quick, Roy F., Jr.; Shah, Ashwin V.; and Wickwire, Ralph O., 4,542,376, Cl. 340-724.000.

Raasch, Hans, to W. Schlafhorst & Co. Device for driving a friction spinning unit. 4,541,232, Cl. 57-104.000.

Raasch, Hans; Wassenhoven, Heinz-Georg; and Derichs, Josef, to W. Schlafhorst & Co. Method and device for starting the operation of a friction-spinning machine unit. 4,541,233, Cl. 57-263.000.

Raasch, Hans, to W. Schlafhorst & Co. Method and device for starting the operation of a friction-spinning unit. 4,541,235, Cl. 57-263.000.

Rachofsky, Morton. Twenty-five (25) hour clock. 4,541,726, Cl. 368-80.000.

Radelow, Wolfgang: *See*—
Gerke, Dieter; Muller, Manfred; Zytowski, Peter; and Radelow, Wolfgang, 4,541,682, Cl. 339-111.000.

Rahwan, Ralf G.: *See*—
Witiak, Donald T.; and Rahwan, Ralf G., 4,542,153, Cl. 514-466.000.

Raidel, John E. Air spring suspension with angular torque beam, U-joint mount therefor, and lateral guides. 4,541,653, Cl. 280-711.000.

Raley, Garland E.; and Spear, Dean M., to Ethyl Corporation. Apparatus for producing perforated plastic film. 4,541,794, Cl. 425-290.000.

Rallapalli, Krishna; and Kaku, Shinkyo, to Advanced Micro Devices, Inc. Facsimile device for run length coding. 4,542,413, Cl. 358-261.000.
Randwal Instrument Co., Inc.: *See*—
Remijan, Paul W., 4,541,697, Cl. 351-211.000.
Rapps, Peter: *See*—
Knoll, Peter; Rapps, Peter; and Ziegler, Wolfgang, 4,541,693, Cl. 350-339.00F.
Rasimus, Seppo U. Edge folder. 4,541,220, Cl. 53-380.000.
Rasmussen, Chris R., to McNeilab Inc. Anticonvulsant N-aryl-N'-(2-thiazolidinylidene)ureas. 4,542,144, Cl. 514-371.000.
Rasmussen, Robert A.: *See*—
MacLean, W. Douglas; and Rasmussen, Robert A., 4,541,627, Cl. 272-72.000.
Ratelband, John B. Fire-guard. 4,541,408, Cl. 126-121.000.
Ratschat, Gunter, to Mannesmann Demag AG. Method and apparatus for recovery and recycling of heat from hot gases. 4,541,864, Cl. 75-41.000.
Rauch, Werner: *See*—
Hahn, Alfred; Rauch, Werner; and Barthelmes, Norbert, 4,542,521, Cl. 378-155.000.
Raue, Roderich; Kuhlthau, Hans-Peter; and Lehment, Klaus-Friedrich, to Bayer Aktiengesellschaft. Process for the preparation of cationic methine dyestuffs. 4,542,223, Cl. 548-455.000.
Raue, Roderich; and Kuhlthau, Hans-Peter, to Bayer Aktiengesellschaft. Process for preparing cationic methine dyestuffs. 4,542,224, Cl. 548-455.000.
Rausch, Roger A., to Honeywell Inc. Electro-mechanical anti-tampering device for electric meters. 4,542,337, Cl. 324-110.000.
Rauscher, Walter: *See*—
Michel, Herbert; Rauscher, Walter; and Reichelt, Achim, 4,541,159, Cl. 29-418.000.
Rausing, Hans A., to Tetra Pak International AB. Filler on packing machines. 4,541,463, Cl. 141-147.000.
Ravich, Alexandr S.: *See*—
Potapkin, Viktor F.; Morozov, Igor A.; Fedorinov, Vladimir A.; and Ravich, Alexandr S., 4,541,263, Cl. 72-243.000.
Raychem Corporation: *See*—
McTavish, Mary S.; Stodieck, Robert W.; and Doljack, Frank A., 4,542,365, Cl. 338-20.000.
Naffrechoux, Etienne; and Delfosse, Thierry, 4,541,203, Cl. 49-485.000.
RCA Corporation: *See*—
Acampora, Alfonse, 4,542,475, Cl. 364-724.000.
Ader, Joseph R., 4,542,402, Cl. 358-30.000.
Crooks, Horatio N.; and Kelly, Martin J., Jr., 4,541,716, Cl. 356-237.000.
Duschl, Robert A., 4,542,404, Cl. 358-106.000.
Lewis, Henry G., Jr., 4,542,408, Cl. 358-167.000.
Read, Edgar L., to Honeywell Inc. Apparatus for switch path verification. 4,542,507, Cl. 371-22.000.
Rebello, Peter R.: *See*—
Norton, John H. R.; Rebello, Peter R.; Kavonic, Clifford M.; and Stiff, Anthony J., 4,541,835, Cl. 44-53.000.
Norton, John H. R.; Rebello, Peter R.; Kavonic, Clifford M.; and Stiff, Anthony J., 4,541,837, Cl. 44-53.000.
Recognition Equipment Incorporated: *See*—
Sanner, Medford D.; and McWaters, Lynn D., 4,542,528, Cl. 382-62.000.
Red Devil, Inc.: *See*—
Tam, Jimmy W.; Odegaard, Gary W.; Scherer, William C.; and Lonneman, Alan P., 4,541,548, Cl. 222-48.000.
Redaelli Tecna Meccanica S.p.A.: *See*—
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Rediffusion Simulation Limited: *See*—
Sullivan, Sean; and Edwards, Roger A., 4,541,694, Cl. 350-371.000.
Redmon, Billy L.: *See*—
Forester, Buford G.; and Redmon, Billy L., 4,541,608, Cl. 251-77.000.
Reed, Karl W.: *See*—
Leibensperger, Robert L.; and Reed, Karl W., 4,541,738, Cl. 384-470.000.
Reeves, Robert: *See*—
Chevalet, Jean; and Reeves, Robert, 4,542,501, Cl. 370-85.000.
Regehr, John L.: *See*—
Hagen, Mark D.; Mendel, Peter J.; and Regehr, John L., 4,542,377, Cl. 340-727.000.
Regie Nationale des Usines Renault: *See*—
Castarede, Armand, 4,541,368, Cl. 123-41.330.
Rehm, Hans-Joerg: *See*—
Geke, Juergen; and Rehm, Hans-Joerg, 4,541,931, Cl. 210-728.000.
Reichelt, Achim: *See*—
Michel, Herbert; Rauscher, Walter; and Reichelt, Achim, 4,541,159, Cl. 29-418.000.
Reidinger, Russell F., Jr., to Monell Chemical Senses Center. Method and automated device for applying measured amounts of control liquids to the dorsal fur of rodent pests. 4,541,199, Cl. 43-131.000.
Reiji, Hirai: *See*—
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Reik, Wolfgang, to Luk Lamellen und Kupplungsbau GmbH. Friction clutch and diaphragm spring therefor. 4,541,514, Cl. 192-70.270.
Reilly, Laurence W., Jr.; and Barton, Jeffrey N., to USV Pharmaceutical Corp. Process for the separation of (S,S) diastereoisomers. 4,542,234, Cl. 560-38.000.
Reimer, Peter, to Index Supply Company, Inc. Mechanized self evacuating fragmentary ice storage bin. 4,541,252, Cl. 62-344.000.
Reinecke, Paul: *See*—
Weissmuller, Joachim; Kramer, Wolfgang; Berg, Dieter; Reinecke, Paul; Brandes, Wilhelm; and Hanssler, Gerd, 4,542,130, Cl. 514-212.000.
Reinert, Gerard E.: *See*—
Kriek, George R.; Chung, James Y. J.; Reinert, Gerard E.; and Neuray, Dieter, 4,542,177, Cl. 524-98.000.
Reinhardt, Dieter, to Kraftwerk Union Aktiengesellschaft. Method for converting carbon-containing raw material into a combustible product gas. 4,541,841, Cl. 48-197.00R.
Reinschreiber, Jonathan P.: *See*—
Collins, Walter W.; and Reinschreiber, Jonathan P., 4,541,556, Cl. 224-196.000.
Reischl, Rolf: *See*—
Kosak, Wolfgang; Reischl, Rolf; and Pschera, Andreas, 4,541,389, Cl. 123-490.000.
Reiss, Bernard; and Ward, Irl E., to Sealy of Maryland and Virginia, Inc. Sofa bed. 4,541,133, Cl. 5-13.000.
Reiter GmbH: *See*—
Reiter, Josef, 4,541,458, Cl. 139-55.100.
Reiter, Josef, to Reiter GmbH; and OMM Officine Meccanotessili Monza S.p.A. Electromechanical control means for controlling movement sequences in a textile machine. 4,541,458, Cl. 139-55.100.
Rembold, Helmut; and Ruoff, Manfred, to Robert Bosch GmbH. Vane type compressor with double-wall vanes. 4,541,790, Cl. 418-137.000.
Remijan, Paul W., to Randwal Instrument Co., Inc. Ophthalmic testing devices. 4,541,697, Cl. 351-211.000.
Reneau, Bobby J. Apparatus for manufacturing substantially spherical objects to a high degree of roundness. 4,541,204, Cl. 51-90.000.
Renfrew, Andrew H. M.: *See*—
McClelland, Robert D.; and Renfrew, Andrew H. M., 4,542,213, Cl. 544-76.000.
Rengo Co., Ltd.: *See*—
Tokuno, Masateru; Sawada, Tetsuya; and Mori, Yasuharu, 4,541,335, Cl. 101-181.000.
Renishaw Electrical Limited: *See*—
McMurtry, David R., 4,542,467, Cl. 364-474.000.
Rensinghoff, Werner: *See*—
Becker, Jorgen; Hendricks, Arno; Herchenbach, Horst; Steinbiss, Eberhard; and Rensinghoff, Werner, 4,541,245, Cl. 60-648.000.
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Niwa, Toshio; Himeno, Kiyoshi; and Yoshihara, Junji, 4,542,207, Cl. 534-630.000.
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Corbach, Rainer; Utsch, Berthold; Mohr, Adolf; and Zimmermann, Kurt, 4,542,314, Cl. 310-154.000.
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Flaig, Ulrich; Fischer, Werner; Locher, Johannes; and Schmidt, Wolfgang, 4,541,271, Cl. 73-117.300.
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Rembold, Helmut; and Ruoff, Manfred, 4,541,790, Cl. 418-137.000.
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Black, Maurice D., Jr., 4,542,510, Cl. 372-2.000.

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Clark, Charles J.; and Bennett, Edward M., 4,541,947, Cl. 252-307.000.

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Payne, George B.; Soloway, Samuel B.; Powell, James E.; Roman, Steven A.; and Kollmeyer, Willy D., 4,542,244, Cl. 568-825.000.

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Rouw, William. Cycle seat. 4,541,668, Cl. 297-201.000.

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Ruff, Gunter, to Licentia Patent-Verwaltungs-GmbH. Subscriber telephone station. 4,542,262, Cl. 179-2.00E.

Ruhl, Thomas, to Daimler-Benz Aktiengesellschaft. Cooling apparatus for combustion engine. 4,541,369, Cl. 123-41.490.

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Sachleben, Harold G.; Hubbard, David W.; Botset, Richard A.; and Hardage, Thomas B., to Allied Corporation. Automatic tail forming apparatus and method. 4,541,576, Cl. 242-18.0PW.
Sadler, Karl O.; and Worzeck, Jonny, to Blohm + Voss AG. Warship with units connected via electronic control apparatuses. 4,541,323, Cl. 89-41.140.
Sadorus, George P., to Talkies International Corp. Reflective audio assembly and picture. 4,541,188, Cl. 40-152.100.
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Saito, Kazuyoshi; Iida, Taketoshi; Shirasaka, Toshio; and Takemura, Yasuhiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Ultrasonic imaging apparatus. 4,541,435, Cl. 128-660.000.
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Saito, Toranosuke; Kitani, Masakatu; Ishibashi, Takashi; Arai, Naoto; Murakami, Takeshi; and Suzuki, Toshitake, to Sanko Kaihatsu Kagaku Kenkyusho; and Kanzai Paper Manufacturing Company Ltd. Heat-sensitive recording material. 4,542,395, Cl. 346-216.000.
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Sakai, Tatsuo, to Fuji Jukogyo Kabushiki Kaisha. Intake and exhaust passages in cylinder heads of an opposed-cylinder engine. 4,541,370, Cl. 123-56.0AC.
Sakakibara, Shiro, to Aisin-Warner Limited. V-belt type stepless transmission. 4,541,820, Cl. 474-17.000.
Sakakibara, Shiro, to Aisin-Warner Limited. V-belt type stepless transmission. 4,541,821, Cl. 474-17.000.
Sakano, Tetsuro, to Fanuc Ltd. Speed control apparatus. 4,542,327, Cl. 318-571.000.
Sakata, Shinji; and Machida, Haruhiko, to Yamasa Shoyu Kabushiki Kaisha. 1-β-D-Arabinofuranosyl-(E)-5-(2-halogenovinyl)-uracil-5'-phosphate, preparation thereof and use thereof. 4,542,210, Cl. 536-29.000.
Sakoda, Yasuhiro, to Sharp Kabushiki Kaisha. Cooking appliance with switching assembly. 4,542,269, Cl. 219-10.55C.
Sakuma, Takeyuki; Nakamura, Masaji; and Mizukoshi, Matsuo, to Konishiroku Photo Industry Co., Ltd. Automatic film loading device. 4,541,173, Cl. 29-806.000.
Sakurai, Toshizo; and Kosaka, Toshiyuki, to Kabushiki Kaisha Yakult Honsha. Method for manufacturing restriction enzymes from Bifidobacteria. 4,542,099, Cl. 435-199.000.
Salam, Hassan P. A. Matrix displays. 4,541,189, Cl. 40-447.000.
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Samejima, Masayoshi; Hirata, Goichi; and Ishibashi, Takashi, to Tanabe Seiyaku Co., Ltd. Process for preparing free-flowing ethylcellulose microcapsules. 4,542,042, Cl. 427-213.360.
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Santacesaria, Elio; Codignola, Franco; Gelosa, Davino; and Carra' , Sergio, to Sisassocieta Italianaserie Acetica Sintetica. Process for the separation of mixtures of aromatic hydrocarbons into single components. 4,542,254, Cl. 585-828.000.
Santomango, Anthony; and Hatheway, Nicholas N., Jr., to Artronics Corporation. Electronic burn-in system. 4,542,341, Cl. 324-158.00F.
Sanyo Chemical Industries, Ltd.: *See*—
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Sasaki, Noboru; Ishikawa, Takatoshi; and Adachi, Keiichi, to Fuji Photo Film Co., Ltd. Color image forming process. 4,542,091, Cl. 430-380.000.
Sasazawa, Kazuo: *See*—
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Sasse, Howard A. Golf club. 4,541,631, Cl. 273-170.000.
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Sato, Akihiko, to Hitachi Maxell, Ltd. Recording tape cartridge. 4,541,588, Cl. 242-199.000.
Sato, Fumihide; and Ono, Toyoichi, to Kabushiki Kaisha Komatsu Seisakusho. Apparatus for controlling fuel injection timing. 4,541,393, Cl. 123-502.000.
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Satoh, Koji; Ooka, Akihiro; and Wada, Yutaka, to Sumitomo Electric Industries, Ltd. Character recognition apparatus. 4,542,526, Cl. 382-13.000.

Satou, Kouichirou, to Tokyo Shibaura Denki Kabushiki Kaisha. Circuit for driving a display device. 4,542,379, Cl. 340-758.000.

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Sausner, Andreas: *See*—
Ruschek, Gerhard; Wietschorke, Stephan; and Sausner, Andreas, 4,541,379, Cl. 123-339.000.

Sauty, Pierre: *See*—
Bosquain, Maurice; Grenier, Maurice; Hay, Leon; Lapeyre, Paul; Lehman, Jean-Yves; Petit, Pierre; and Sauty, Pierre, 4,541,851, Cl. 55-208.000.

Sawabe, Masaki; and Kumagai, Tadanobu, to Toyota Jidosha Kogyo Kabushiki Kaisha. Drive shaft assembly. 4,541,817, Cl. 464-111.000.

Sawada, Tetsuya: *See*—
Tokuno, Masateru; Sawada, Tetsuya; and Mori, Yasuharu, 4,541,335, Cl. 101-181.000.

Sawai, Nobushige; Miyasaka, Kaneyoshi; and Murata, Ryoji, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Automatic cutting edge changer for cutting tool. 4,541,165, Cl. 29-568.000.

Sawayda, David J.: *See*—
Schaefer, Martin A.; and Sawayda, David J., 4,542,433, Cl. 361-92.000.

Sawyer, Willard H.: *See*—
Mitchell, Howard L., III; and Sawyer, Willard H., 4,542,121, Cl. 502-220.000.

Say, Donald L., to North American Philips Consumer Electronics Corp. CRT lensing electrodes having apertures defined by tapered sidewalls. 4,542,318, Cl. 313-414.000.

Scapa Inc.: *See*—
Albert, Hans, 4,541,895, Cl. 162-348.000.

Scates, Mark O.: *See*—
Dougherty, Edward F.; and Scates, Mark O., 4,542,231, Cl. 560-4.000.

Schade, Horst J.; Gelhaar, Rolf; and Hartmann, Wolfgang, to Metallgesellschaft Aktiengesellschaft. Collector electrode assembly for tubular electrostatic precipitator. 4,541,849, Cl. 55-146.000.

Schaefer, Martin A.; and Sawayda, David J., to Sperry Corporation. Missing phase detector. 4,542,433, Cl. 361-92.000.

Schafer, Ulrich: *See*—
Muhlberger, Horst; Prinz, Bruno; Wunder, Wolf; Schafer, Ulrich; and Bognar, Josef, 4,541,878, Cl. 148-139.000.

Schaffer, Norbert: *See*—
Stumpfi, Werner; Bettinger, Gunter; Engel, Friedrich; Fitterer, Horst; Kreimes, Norbert; Pfefferkorn, Dietmar; Schaffer, Norbert; and Schmidts, Kurt, 4,541,587, Cl. 242-197.000.

Schalke, Peter; Manfred, Langer; and Huthmacher, Klaus, to Degussa Aktiengesellschaft. Process for the production of guanidine hydrochloride. 4,542,240, Cl. 564-232.000.

Schard, Lothar, to SKF Kugellagerfabriken GmbH. Lubricating rotor bearings in open end spinning machines. 4,541,740, Cl. 384-473.000.

Scharer, Max: *See*—
Van Gestel, Josef; Duytschaever, Benedikt; Muntwyler, Rene ; and Scharer, Max, 4,542,146, Cl. 514-383.000.

Schaty, Harold, to USM Corporation. Mounting clip. 4,541,153, Cl. 24-305.000.

Schaul, Jean-Paul, to Fraver S.A. Process and apparatus for continuously treating a web adapted to pass through a computer printer. 4,541,337, Cl. 101-227.000.

Schaumann, Peter H. Water glider assembly. 4,541,809, Cl. 441-76.000.

Schechter, Michael M.; and Simko, Aladar O., to Ford Motor Company. Fuel injection pump. 4,541,394, Cl. 123-506.000.

Scheithauer, Heinz. Apparatus for metering liquids or semiliquids. 4,541,552, Cl. 222-501.000.

Scheller, Alfred K., to Centre National d'Etudes Spatiales. Process for the control of the mixture ratio of fuel and oxidizer for a liquid fuel motor by measuring flows, and control systems for carrying out this process. 4,541,238, Cl. 60-204.000.

Schenz, Timothy W.; Eisenhardt, William A., Jr.; and Saleeb, Fouad Z., to General Foods Corporation. Method and manufacture for easily spray-driable low molecular weight sugars. 4,541,873, Cl. 127-46.100.

Scherer, George W., to Corning Glass Works. Method of forming a glass or ceramic product. 4,541,855, Cl. 65-18.100.

Scherer, William C.: *See*—
Tam, Jimmy W.; Odegaard, Gary W.; Scherer, William C.; and Lonneman, Alan P., 4,541,548, Cl. 222-48.000.

Schering Aktiengesellschaft: *See*—
Bittler, Dieter; Laurent, Henry; Nickisch, Klaus; Weichert, Rudolf; and Casals-Stenzel, Jorge, 4,542,128, Cl. 514-177.000.
Nickisch, Klaus; Bittler, Dieter; Laurent, Henry; Wiechert, Rudolf; and Losert, Wolfgang, 4,542,024, Cl. 514-178.000.

Scherrer, Hans. Cuticle cutting tweezers with progressive cutting edge engagement. 4,541,428, Cl. 128-305.000.

Scheve, Heinrich: *See*—
Hibbel, Josef; Gerhardus, Ulrich; Schmidt, Volkmar; Lieder, Bernhard; Scheve, Heinrich; and Zerres, Erwin, 4,541,840, Cl. 48-63.000.

Schield, John A.: *See*—
Naiman, Michael I.; and Schield, John A., 4,541,839, Cl. 44-62.000.

Schindele, Alfred; and Lotze, Herbert, to Terrot Strickmaschinen GmbH. Needle selector device for multi-system knitting machine. 4,541,254, Cl. 66-223.000.

Schirmer, Henry G., to W. R. Grace & Co., Cryovac Div. High barrier shrink film. 4,542,075, Cl. 428-516.000.

Schloemer, George C., to Syntex Pharmaceuticals International Limited. Manufacture of alpha-arylalkanoic acids and precursors. 4,542,237, Cl. 562-466.000.

Schlough, Thomas L., to Park Tool Company. Hydraulic stone shaping machine. 4,541,405, Cl. 125-23.00R.

Schlumberger Technology Corporation: *See*—
Ellis, Darwin V., 4,542,292, Cl. 250-256.000.
Lancaster, Charles E., 4,541,481, Cl. 166-65.100.

Schmid, Bruce K.: *See*—
Beuther, Harold; Kobylinski, Thaddeus P.; Lee, Win-Chung; and Schmid, Bruce K., 4,541,916, Cl. 208-8.01LE.

Schmid, Martin: *See*—
Kollmannsberger, Otto; and Schmid, Martin, 4,542,374, Cl. 340-648.000.

Schmidt, Henning M.; Malmkvist, Hans G.; Aksberg, Arvi J.; and Johansson, Jan H., to Telefonaktiebolaget LM Ericsson. Lead-frame for an electric microphone. 4,542,264, Cl. 179-111.00E.

Schmidt, Jimmy Q.; and Loder, Rurik K., to United States of America, Army. Apparatus for measuring projectile's transverse displacement at gun muzzle. 4,542,342, Cl. 324-207.000.

Schmidt, Robert R.: *See*—
Pfister, Theodor; Eue, Ludwig; Schmidt, Robert R.; and Hanssler, Gerd, 4,541,858, Cl. 71-86.000.

Schmidt, Volkmar: *See*—
Hibbel, Josef; Gerhardus, Ulrich; Schmidt, Volkmar; Lieder, Bernhard; Scheve, Heinrich; and Zerres, Erwin, 4,541,840, Cl. 48-63.000.

Schmidt, Wolfgang: *See*—
Flaig, Ulrich; Fischer, Werner; Locher, Johannes; and Schmidt, Wolfgang, 4,541,271, Cl. 73-117.300.

Schmidts, Kurt: *See*—
Stumpfi, Werner; Bettinger, Gunter; Engel, Friedrich; Fitterer, Horst; Kreimes, Norbert; Pfefferkorn, Dietmar; Schaffer, Norbert; and Schmidts, Kurt, 4,541,587, Cl. 242-197.000.

Schoeber, Gernot: *See*—
Barfuss, Juergen; Oestreich, Ulrich; Schoeber, Gernot; and Schrey, Wolfgang, 4,541,686, Cl. 350-96.230.

Scholz, Stefan; and Tyssen, Egon, to Honeywell Inc. Infrared simulator. 4,542,299, Cl. 250-504.00R.

Schomberg, Hermann, to U.S. Philips Corporation. Method of determining the time-of-flight of an ultrasonic pulse. 4,541,279, Cl. 73-597.000.

Schon, Christian O. Centrifugal blower for hot fluids. 4,541,776, Cl. 415-200.000.

Schonhaar, Werner W.; Wallace, Keith; and Dickson, Tim R., to Fiberglas Canada, Inc. Enhanced surface fiberizer. 4,541,854, Cl. 65-15.000.

Schoumaker, Raoul J. P., to Westinghouse Electric Corp. Self-locking mounting clip system. 4,541,599, Cl. 248-222.200.

Schreiber, William L.: *See*—
Sprecker, Mark A.; Schreiber, William L.; Fujioka, Futoshi; Boden, Richard M.; Vock, Manfred H.; Whelan, Patrick; and Hanna, Marie R., 4,541,949, Cl. 252-522.00R.

Schrey, Wolfgang: *See*—
Barfuss, Juergen; Oestreich, Ulrich; Schoeber, Gernot; and Schrey, Wolfgang, 4,541,686, Cl. 350-96.230.

Schubert, Hermann; Thone, Heinrich; and Kasmader, Richard, to Voest-Alpine Aktiengesellschaft. Continuous casting mould. 4,541,478, Cl. 164-440.000.

Schubring, Norman W., to General Motors Corporation. Microwave heating control and calorimetric analysis. 4,541,729, Cl. 374-31.000.

Schulte, Wolfgang: *See*—
Bechthold, Horst; Fischer, Heinz J.; and Schulte, Wolfgang, 4,541,999, Cl. 423-235.000.

Schulz-Hennig, Jorg, to Dr. Ing. Rudolf Hell GmbH. Method and apparatus for setting and monitoring an exposure spot for printing. 4,542,392, Cl. 346-160.000.

Schulze, Eckehart, to Hartmann & Lammle GmbH & Co. KG. Hydraulic driving arrangement for reciprocable masses or the like. 4,541,241, Cl. 60-414.000.

Schupp, Eberhard; Loch, Werner; Osterloh, Rolf; and Ahlers, Klaas, to BASF Aktiengesellschaft. Surface coating binders which are self-crosslinking when heated, their preparation and their use. 4,542,173, Cl. 523-414.000.

Schupp, Eberhard; Loch, Werner; Osterloh, Rolf; and Ahlers, Klaas, to BASF Aktiengesellschaft. Cathodic electrocoating binders. 4,542,193, Cl. 525-490.000.

Schuppiser, Jean-Luc; and Daniel, Jean-Claude, to Rhone-Poulenc Specialties Chimiques. Latices of vinyl acetate polymers. 4,542,181, Cl. 524-560.000.

Schuppiser, Jean-Luc; and Daniel, Jean-Claude, to Rhone-Poulenc Specialties Chimiques. Latices of vinyl acetate/olefin copolymers. 4,542,182, Cl. 524-563.000.

Schutten, Herman P.; Benjamin, James A.; and Lade, Robert W., to Eaton Corporation. Trapped charge bidirectional power FET. 4,542,396, Cl. 357-23.400.

Schwab, Heinrich; and Kaschke, Werner, to Degussa Aktiengesellschaft. Process for deodorizing sludge. 4,541,986, Cl. 422-5.000.

Schwanitz, Konrad; and Mahler, Gert, to Gebr. Happich GmbH. Dazzle reducing arrangement for illuminated sun visor, particularly for automotive vehicles. 4,541,663, Cl. 296-97.00H.

Sciuto, Michael N. Stringed instrument saddle lock. 4,541,320, Cl. 84-298.000.

SCM Corporation: *See*—
Carlson, Gary M.; and Wickert, Frank A., 4,542,180, Cl. 524-512.000.
Hwang, Jennie S., 4,541,876, Cl. 148-22.000.

Scott, John W.: *See*—
Watkins, Paul; and Scott, John W., 4,542,003, Cl. 423-340.000.

SEA Schleifmittel Entwicklung Anwendung GmbH: *See*—
Elbel, Karl; and Augustin, Rainer, 4,541,843, Cl. 51-298.000.

Sealy of Maryland and Virginia, Inc.: *See*—
Reiss, Bernard; and Ward, Irl E., 4,541,133, Cl. 5-13.000.

Searle, Richard J.: *See*—
Davis, Eugene E.; and Searle, Richard J., 4,541,536, Cl. 215-252.000.

Sebastiano, Francesco, to Societa' Italiana Vetro - SIV - S.p.A. Process for manufacturing a motor vehicle windshield. 4,541,881, Cl. 156-99.000.

Secrist, Duane R.; Clark, James M.; and Landon, Thomas E., to Great Lakes Carbon Corporation. Cermet electrode assembly. 4,541,912, Cl. 204-290.00R.

Sedlock, David M.: *See*—
Gorman, William G.; Popp, Karl F.; Galloway, Jennifer C.; and Sedlock, David M., 4,542,125, Cl. 514-57.000.

Seigle, Sandra K.: *See*—
Anderson, James D.; and Seigle, Sandra K., 4,541,945, Cl. 252-149.000.

Seitetsu Kagaku Co., Ltd.: *See*—
Obayashi, Shigeji; Nakamura, Morio; Yamamoto, Takushi; and Fujikake, Masato, 4,541,871, Cl. 106-197.200.

Seiver, Robert L., to Exxon Research and Engineering Co. Composition and reforming process for the operation of a magnetically stabilized fluidized bed. 4,541,920, Cl. 208-138.000.

Seiver, Robert L.; and Gernand, Martin O., to Exxon Research and Engineering Co. Composition and hydrotreating process for the operation of a magnetically stabilized fluidized bed. 4,541,925, Cl. 208-216.00R.

Sekiba, Toshinobu, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor device with sprayed metal layer. 4,542,401, Cl. 357-71.000.

SemiConductor Energy Laboratory Co.: *See*—
Yamazaki, Shunpei, 4,541,166, Cl. 29-571.000.

Semitros, Nicholas: *See*—
Caverly, Lendall R., Jr.; Gleason, Robert F.; Hadfield, Don A.; McNerney, Norman E.; Meade, Daniel A.; Richardson, Alfred G.; Semitros, Nicholas; and Thornton, Martin Q., 4,541,970, Cl. 264-1.500.

Senter, Peter D.: *See*—
Blattler, Walter A.; Lambert, John M.; and Senter, Peter D., 4,542,225, Cl. 548-473.000.

Sentman, Robert C.: *See*—
Curatolo, Benedict S.; Sentman, Robert C.; and Coffey, Gerald P., 4,542,205, Cl. 528-336.000.

Seragnoli, Enzo, to G.D. Societa Per Azioni. Method of automatically changing reels of strip material in packaging machines. 4,541,221, Cl. 53-396.000.

Servsteel, Inc.: *See*—
McQuillen, Albert L., Jr., 4,541,553, Cl. 222-591.000.

Seto, Junetsu: *See*—
Watanabe, Haruo; Seto, Junetsu; Suzuki, Kiyosuke; and Fukuma, Toshiaki, 4,542,084, Cl. 430-46.000.

Sexton, Daniel W., to General Electric Company. Sine wave generator. 4,542,353, Cl. 331-143.000.

Seymour, Edward A. Treating liquids in tanks. 4,541,928, Cl. 210-177.000.

Shadbolt, Philip; and Cassey, Graham E., to Esselte Pendaflex Corporation. Transfer imaging systems. 4,542,052, Cl. 428-40.000.

Shah, Ashwin V.: *See*—
Bass, Leland J.; Quick, Roy F., Jr.; Shah, Ashwin V.; and Wickwire, Ralph O., 4,542,376, Cl. 340-724.000.

Shah, Kirti C., to General Electric Co. Ultrasonic temperature sensor. 4,541,732, Cl. 374-117.000.

Shaken Co., Ltd.: *See*—
Fuse, Shigeru; Takashima, Masatake; Fukuda, Shinichiro; and Shibata, Hiroyuki, 4,542,412, Cl. 358-260.000.

Shakib, Iraj D.: *See*—
Bobart, Kevin L.; Samson, Robert S.; and Shakib, Iraj D., 4,541,746, Cl. 400-144.200.

Sharman, Richard A.: *See*—
Watt, Peter B.; and Sharman, Richard A., 4,541,688, Cl. 350-171.000.

Sharp Kabushiki Kaisha: *See*—
Ando, Yuzi, 4,542,270, Cl. 219-10.55B.
Hashimoto, Shintaro; and Tanimoto, Akira, 4,542,478, Cl. 364-900.000.
Sakoda, Yasuhiro, 4,542,269, Cl. 219-10.55C.

Sheffer, Kenneth W. Piston pump having inertial rollers mounted for radial movement. 4,541,781, Cl. 417-211.000.

Shell Oil Company: *See*—
Cornelissen, Anton E., 4,541,724, Cl. 366-290.000.
Langner, Carl G., 4,541,753, Cl. 405-166.000.
Lucien, Jacques P., 4,542,248, Cl. 585-322.000.
Payne, George B.; Soloway, Samuel B.; Powell, James E.; Roman, Steven A.; and Kollmeyer, Willy D., 4,542,244, Cl. 568-825.000.

Shepard, Charles L.: *See*—
Graham, Clarence O., Jr.; Shepard, Charles L.; Ruppenicker, George F., Jr.; and Kullman, Russell M. H., 4,541,231, Cl. 57-12.000.

Shepard, Kenneth L., to Merck & Co., Inc. 5-[Phenylsulfonyl(or sulfinyl)]thiophene-2-sulfonamides for the topical treatment of elevated intraocular pressure. 4,542,152, Cl. 514-445.000.

Shepard, Mark E.: *See*—
Kenny, Garry R.; Sommer, Edward J., Jr.; and Shepard, Mark E., 4,541,530, Cl. 209-571.000.

Sheriff, Merle M., to Hydraulic Technology Corporation. Telescopic cylinder construction. 4,541,325, Cl. 92-52.000.

Sherman, Daniel A. Tamper-proof rodent bait station. 4,541,198, Cl. 43-131.000.

Sherwood, William L. Continuous vacuum degassing and casting of steel. 4,541,865, Cl. 75-46.000.

Sheth, Jayesh V.: *See*—
Mortensen, David J.; and Sheth, Jayesh V., 4,542,457, Cl. 364-200.000.

Shibahara, Hiroshi; and Tachibana, Hiromitsu, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Method for particulate production of condensate of aldehyde compound and phenol compound. 4,542,204, Cl. 528-140.000.

Shibata, Hiroyuki: *See*—
Fuse, Shigeru; Takashima, Masatake; Fukuda, Shinichiro; and Shibata, Hiroyuki, 4,542,412, Cl. 358-260.000.

Shiff, Max J.; and Davis, Gene, to Decor Noel Corporation. Decorative ornament having garland and a light string. 4,542,446, Cl. 362-122.000.

Shigemasa, Masayoshi: *See*—
Akutagawa, Hitoshi; Shigemasa, Masayoshi; and Hayashi, Hiroaki, 4,541,503, Cl. 180-249.000.

Shigenobu, Michio, to Canon Kabushiki Kaisha. Heating-fixing device. 4,541,708, Cl. 355-3.0FU.

Shikano, Tohru: *See*—
Arai, Masayuki; Ogasawara, Terumi; and Shikano, Tohru, 4,542,410, Cl. 358-228.000.

Shimakura, Yoshiteru: *See*—
Shimizu, Toshihide; Kaneko, Ichiro; and Shimakura, Yoshiteru, 4,542,195, Cl. 526-62.000.

Shimbo, Masaru: *See*—
Furukawa, Kazuyoshi; Shimbo, Masaru; Fukuda, Kiyoshi; and Tanzawa, Katsujirou, 4,542,105, Cl. 501-22.000.

Shimizu, Katsuhisa; and Magata, Yoshihiro, to Pioneer Electronic Corporation. Radio - cassette tape recorder/player system. 4,542,490, Cl. 369-6.000.

Shimizu, Shoichi: *See*—
Yamada, Hisashi; and Shimizu, Shoichi, 4,542,370, Cl. 340-347.0AD.

Shimizu, Tokihiko: *See*—
Hotta, Shu; Shimizu, Tokihiko; and Taguchi, Nobuyoshi, 4,541,830, Cl. 8-471.000.

Shimizu, Toshihide; Kaneko, Ichiro; and Shimakura, Yoshiteru, to Shin-Etsu Chemical Co., Ltd. Method for preventing polymer scale deposition in the polymerization of an ethylenically unsaturated monomer. 4,542,195, Cl. 526-62.000.

Shimoie, Shizuo, to Kubota, Ltd. Method of remodeling control section of backhoe. 4,541,161, Cl. 29-401.100.

Shimoyama, Haruo; Ohshima, Toshio; Nomoto, Shinobu; Hiraoka, Makoto; and Hanabata, Toshio, to Nippon Electric Co., Ltd.; Nippon Telegraph & Telephone Public Corporation; and Fujitsu Limited. Video/audio simultaneous transmission system. 4,542,406, Cl. 358-141.000.

Shin-Etsu Chemical Co., Ltd.: *See*—
Shimizu, Toshihide; Kaneko, Ichiro; and Shimakura, Yoshiteru, 4,542,195, Cl. 526-62.000.

Shinohara, Hirofumi: *See*—
Anami, Kenji; Yoshimoto, Masahiko; Shinohara, Hirofumi; and Tomisawa, Osamu, 4,542,486, Cl. 365-230.000.

Shirasaka, Toshio: *See*—
Saito, Kazuyoshi; Iida, Taketoshi; Shirasaka, Toshio; and Takemura, Yasuhiko, 4,541,435, Cl. 128-660.000.

Shirato, Takehide, to Fujitsu Limited. Read only memory. 4,542,482, Cl. 365-182.000.

Shiroki Kinzoku Kogyo Kabushiki Kaisha: *See*—
Fukuta, Kinsho; and Kanamaru, Makoto, 4,541,672, Cl. 297-367.000.

Shoptaugh, Philip L. Board game structure. 4,541,635, Cl. 273-284.000.

Shreve, James S., to United States of America, Army. Optical digital to analog converter. 4,542,367, Cl. 340-347.0DA.

Sichez, Yves R.: *See*—
Bodros, Christian Y.; Le Besco, Joel V.; and Sichez, Yves R., 4,542,498, Cl. 370-60.000.

Siemens Aktiengesellschaft: *See*—
Barfuss, Juergen; Oestreich, Ulrich; Schoeber, Gernot; and Schrey, Wolfgang, 4,541,686, Cl. 350-96.230.
Bednarz, Jurgen; and Lindig, Wolfgang, 4,542,076, Cl. 428-624.000.
Elmqvist, Hakan; and Strandberg, Hans, 4,541,430, Cl. 128-419.0PG.
Fladerer, Heinrich; and Magerl, Johann, 4,542,503, Cl. 370-100.000.
Haessler, Heinrich; and Kuhl, Wilfried, 4,542,266, Cl. 200-144.00B.
Hahn, Alfred; Rauch, Werner; and Barthelmes, Norbert, 4,542,521, Cl. 378-155.000.
Hassler, Dieter; and Mittelstaedt, Wolfgang, 4,541,436, Cl. 128-660.000.
Michel, Herbert; Rauscher, Walter; and Reichelt, Achim, 4,541,159, Cl. 29-418.000.
Moustakas, Steven; and Witte, Hans, 4,542,536, Cl. 455-607.000.

Signetics Corporation: *See*—
Blauschild, Robert A., 4,542,305, Cl. 307-353.000.

Boyer, Richard M., 4,542,331, Cl. 323-313.000.
Sillars, Ian M. Rotary apparatus for printing quasi random number tables. 4,541,333, Cl. 101-76.000.
Simig, Gyula: *See—*
Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nyitrai , Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Visky nee Gombos, Zsuzsanna; and Barta nee Szalai, Gizella, 4,541,955, Cl. 260-330.900.
Simko, Aladar O.: *See—*
Schechter, Michael M.; and Simko, Aladar O., 4,541,394, Cl. 123-506.000.
Simmonds Precision Products, Inc.: *See—*
Drexler, Rudolph A., 4,542,442, Cl. 361-413.000.
Powell, Fred D., 4,542,336, Cl. 324-77.00B.
Simmons, Gerald P.: *See—*
Riediger, Craig W.; Mangus, Ervin E.; Simmons, Gerald P.; and Knock, Anthony J., 4,541,497, Cl. 180-6.480.
Simon, Attila: *See—*
Gomory, Pal; Hegedus, Janos; Kiss, Ferenc; and Simon, Attila, 4,541,488, Cl. 166-307.000.
Simon Greenberg Foundation, The: *See—*
Labows, John N., Jr.; Webster, Guy; and McGinley, Kenneth J., 4,542,097, Cl. 435-126.000.
Simons, Samuel, to Dana Corporation. Method of welding aluminum driveshaft components. 4,542,280, Cl. 219-137.0WM.
Simplex Time Recorder Co.: *See—*
Golarz, Jeffrey, 4,542,286, Cl. 235-377.000.
Singer, Barry M.: *See—*
Arnold, Emil; and Singer, Barry M., 4,542,405, Cl. 358-111.000.
Singer Company, The: *See—*
Ketterer, Stanley J., 4,541,350, Cl. 112-254.000.
Singh, Bawa; and Boyarsky, David, to Denton Vacuum Inc. Inverted magnetron ion source. 4,542,321, Cl. 315-111.810.
Siol, Werner: *See—*
Elser, Wilhelm; Huebner, Klaus; Siol, Werner; Mager, Theodor; and Wicke, Michael, 4,542,171, Cl. 523-201.000.
Sirac SPA: *See—*
Filippini, Andrea; and Carobbi, Renato, 4,542,161, Cl. 521-53.000.
Sirinyan, Kirkor; Merten, Rudolf; Wolf, Gerhard D.; Giesecke, Henning; Claussen, Uwe; and Ebneth, Harold, to Bayer Aktiengesellschaft. Surface metallized semiconductors. 4,542,074, Cl. 428-450.000.
Sisassocieta Italianaserie Acetica Sintetica: *See—*
Santacesaria, Elio; Codignola, Franco; Gelosa, Davino; and Carra' , Sergio, 4,542,254, Cl. 585-828.000.
Sivertson, Larry M.: *See—*
Jarvis, George A.; and Sivertson, Larry M., 4,542,268, Cl. 219-10.55B.
Sjodin, Carl A., to Armerad Betong Vagforbattringar Aktiebolag. Method of recovering environment-detrimental material. 4,541,846, Cl. 55-97.000.
Skakoon, James G.: *See—*
Prosl, Frank R.; Skakoon, James G.; Carlozzi, Gerard S.; and Infusaid Corporation, 4,541,429, Cl. 604-249.000.
SKF Kugellagerfabriken GmbH: *See—*
Olschewski, Armin; Laszlofalvi, Zoltan; and Kunkel, Heinrich, 4,541,818, Cl. 464-134.000.
Schard, Lothar, 4,541,740, Cl. 384-473.000.
SKF (U.K.) Limited: *See—*
Woodbridge, Keith W.; and Hjertzen, Derrick G., 4,541,741, Cl. 384-482.000.
Skillmech AB: *See—*
Vieglins, Dzintars, 4,541,600, Cl. 248-239.000.
Smakman, Robert; and van den Berg, Gerrit H., to Organon Teknika B.V. Dialysis apparatus and process for controlling the phosphate level of blood. 4,542,015, Cl. 424-79.000.
Smeatham, Charles A.: *See—*
Cooke, Edward I.; Pinnington, Arthur J.; and Smeatham, Charles A., 4,541,979, Cl. 264-174.000.
Smith, Brendan E., to Penlon Limited. Gas humidifying apparatus and method. 4,541,966, Cl. 261-27.000.
Smith, David H.: *See—*
Walsh, Ray P.; and Smith, David H., 4,541,156, Cl. 26-81.000.
Smith, Dennis W.: *See—*
Allen, Terry S.; Smith, Dennis W.; and Jacobson, Peter E., 4,541,739, Cl. 384-470.000.
Smith, Glen H., to Consolidated Controls Corporation. Disconnectable valve motor drive. 4,541,609, Cl. 251-129.030.
Smith, Judson L. Vehicle scrubbing apparatus. 4,541,874, Cl. 134-6.000.
Smith & Nephew Associated Companies p.l.c.: *See—*
Webster, David F., 4,541,426, Cl. 128-156.000.
Smith, Richard L.: *See—*
Miller, Robert N.; and Smith, Richard L., 4,542,183, Cl. 524-714.000.
Smith, Robert E. Heating equipment and method of operating same. 4,541,561, Cl. 236-10.000.
SmithKline Beckman Corporation: *See—*
Borowski, Stanley J.; and Post, Thomas A., 4,541,954, Cl. 260-239.0BB.
Huffman, William F.; and Moore, Michael L., 4,542,124, Cl. 514-11.000.
Smyth, Donald N., to SABCO Ltd. Quick release hose coupling. 4,541,657, Cl. 285-305.000.
Snider, David M.: *See—*
Patrick, Michael J.; and Snider, David M., 4,542,453, Cl. 364-200.000.
Snively, Ross C., to Western Production Corporation. Organic growth inducing compound developed from coal and additives. 4,541,857, Cl. 71-24.000.
Socha, Richard F.: *See—*
Chang, Clarence D.; Penick, Joe E.; and Socha, Richard F., 4,542,247, Cl. 585-254.000.
Societa' Italiana Vetro - SIV - S.p.A.: *See—*
Sebastiano, Francesco, 4,541,881, Cl. 156-99.000.
S.A. Des Etablissements Staubli (France): *See—*
Palau, Joseph, 4,541,459, Cl. 139-88.000.
Societe Anonyme Dite: les Cables de Lyon: *See—*
Boby, Joel, 4,542,358, Cl. 333-246.000.
S.A. Joy & Cie: *See—*
Joly, Arthur, 4,541,222, Cl. 53-399.000.
Societe Nationale D'Etude et de Construction de Moteurs D'Aviation: *See—*
Jourdain, Gerard E. A.; and Soligny, Marcel R., 4,541,567, Cl. 239-265.370.
Societe Nationale Elf Aquitaine: *See—*
Armand, Michel B.; and El Kadiri Cherkaoui El Moursli, Fouzia, 4,542,081, Cl. 429-192.000.
Societe Nationale Elf Aquitaine (Production) Tour Aquitaine: *See—*
Castel, Yvon; and Iato, Michel, 4,541,754, Cl. 405-168.000.
Castel, Yvon; and Iato, Michel, 4,541,755, Cl. 405-195.000.
Societe Nouvelle Transfix: *See—*
Beisser, Jean-Claude, 4,542,362, Cl. 336-60.000.
Soejima, Shigeo: *See—*
Mase, Syunzo; and Soejima, Shigeo, 4,541,898, Cl. 204-1.00T.
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Sok, Brian A.: *See—*
Nickola, Richard A.; Sok, Brian A.; and Agarwal, Shashi B., 4,542,048, Cl. 427-380.000.
Solarex Corporation: *See—*
Francis, Robert W.; Napoli, Joseph D.; and Tsien, Hsue C., 4,542,258, Cl. 136-256.000.
Solavolt International: *See—*
Sarma, Kalluri R.; and Chanley, Charles S., 4,542,004, Cl. 423-342.000.
Soligny, Marcel R.: *See—*
Jourdain, Gerard E. A.; and Soligny, Marcel R., 4,541,567, Cl. 239-265.370.
Solmat Systems Ltd.: *See—*
Assaf, Gad, 4,541,244, Cl. 60-641.800.
Soloway, Samuel B.: *See—*
Payne, George B.; Soloway, Samuel B.; Powell, James E.; Roman, Steven A.; and Kollmeyer, Willy D., 4,542,244, Cl. 568-825.000.
SOLVAY & Cie (Societe Anonyme): *See—*
Lecloux, Andre; and Legrand, Franz, 4,542,245, Cl. 568-842.000.
Sommer, August; Brucker, Rainer; Heitmann, Wilhelm; and Wozny, Norbert, to Chemische Werke Huls Aktiengesellschaft. Distillation process for the production of dehydrated ethanol. 4,541,897, Cl. 203-19.000.
Sommer, Edward J., Jr.: *See—*
Kenny, Garry R.; Sommer, Edward J., Jr.; and Shepard, Mark E., 4,541,530, Cl. 209-571.000.
Sommers, Hans; and Hanselmann, Dieter, to Ruhrgas Aktiengesellschaft. Cooking station for gas ranges. 4,541,407, Cl. 126-39.00E.
Sono-Tek Corporation: *See—*
Berger, Harvey L.; Ericson, A. Earle; and Levine, Carl, 4,541,564, Cl. 239-102.000.
Sony Corporation: *See—*
Ida, Mitsuru, 4,542,431, Cl. 360-137.000.
Ishihara, Mitsugu, 4,542,424, Cl. 360-73.000.
Morio, Minoru; Nakano, Kenji; and Moriwaki, Hisayoshi, 4,542,419, Cl. 360-19.100.
Narabu, Tadakuni, 4,542,301, Cl. 307-269.000.
Watanabe, Haruo; Seto, Junetsu; Suzuki, Kiyosuke; and Fukuma, Toshiaki, 4,542,084, Cl. 430-46.000.
Yoneyama, Shigeyuki; Nakano, Kenji; Moriwaki, Hisayoshi; and Takahashi, Takao, 4,542,418, Cl. 360-19.100.
Sophus Berendsen Marine A/S: *See—*
Jensen, Jens C., 4,541,149, Cl. 24-134.00R.
Soumar, Karel; and Erling, Earl. Hot tap saddle fitting. 4,541,447, Cl. 137-15.000.
Southern Research Institute: *See—*
Tice, Thomas R.; Lewis, Danny H.; Cowsar, Donald R.; and Beck, Lee R., 4,542,025, Cl. 424-78.000.
Southwire Company: *See—*
Starnes, R. Emory, Jr., 4,541,277, Cl. 73-432.00R.
Spartanics, Ltd.: *See—*
Mohan, William L.; and Willits, Samuel P., 4,542,470, Cl. 364-485.000.
Spear, Dean M.: *See—*
Raley, Garland E.; and Spear, Dean M., 4,541,794, Cl. 425-290.000.
Spectrum Sports, Inc.: *See—*
Leighton, Kenneth B., 4,541,184, Cl. 36-44.000.
Spence, J. Ronald, to Phillips Petroleum Company. Stirred vortex tank reactor and method of CO_2 addition for producing overbased petroleum sulfonate. 4,541,940, Cl. 252-33.000.
Spencer, Kenneth B.: *See—*
Caner, Ali R.; and Spencer, Kenneth B., 4,542,029, Cl. 426-127.000.
Speno International S.A.: *See—*
Panetti, Romolo, 4,541,182, Cl. 33-560.000.

Spero, Richard J.: *See—*
Armour, Charles R.; Domke, Robert R.; and Spero, Richard J., 4,541,804, Cl. 434-15.000.

Sperry Corporation: *See—*
Allen, Terry S.; Smith, Dennis W.; and Jacobson, Peter E., 4,541,739, Cl. 384-470.000.
Schaefer, Martin A.; and Sawayda, David J., 4,542,433, Cl. 361-92.000.

Spiesman, Robert L.: *See—*
Kozlik, Tony J.; and Spiesman, Robert L., 4,542,420, Cl. 360-42.000.

Spigarelli, Donald J.; Peck, Douglas J.; Hall, Walter J.; and Finney, James L., to HTC Corporation, The. Method and apparatus for solder removal. 4,541,358, Cl. 118-58.000.

Spooner, Thomas H., to Olin Corporation. Method of halogenating isocyanuric acid. 4,542,218, Cl. 544-190.000.

Sposini, Maurizio: *See—*
Bella, Luigi; Brignolo, Roberto; Barberis, Giulio; and Sposini, Maurizio, 4,542,499, Cl. 370-85.000.

Sprague, Peter W.; Loots, Melanie J.; and Haslanger, Martin F., to E. R. Squibb & Sons, Inc. Method of use of bicycloheptane substituted prostaglandin analogs as cardiovascular agents. 4,542,160, Cl. 514-569.000.

Sprecker, Mark A.; Schreiber, William L.; Fujioka, Futoshi; Boden, Richard M.; Vock, Manfred H.; Whelan, Patrick; and Hanna, Marie R., to International Flavors & Fragrances Inc. Polyhydroindan carboxaldehydes. 4,541,949, Cl. 252-522.00R.

Sprecker, Mark A.: *See—*
Hall, John B.; and Sprecker, Mark A., 4,541,951, Cl. 252-522.00R.

Sproull, James F., to PPG Industries, Inc. Fiber glass composition. 4,542,106, Cl. 501-38.000.

Square D Company: *See—*
Nichols, Edward L., III; and Harrison, Edward A., 4,542,432, Cl. 361-44.000.

Stadelmaier, Hans H.; and ElMasry, Nadia A., to North Carolina State University. Method of producing high performance permanent magnets. 4,541,877, Cl. 148-101.000.

Stadler, Siegmund: *See—*
Faessle, Fritz; and Stadler, Siegmund, 4,541,471, Cl. 164-6.000.

Stahly, G. Patrick, to Ethyl Corporation. Preparation of 4-(3-cyano-4-nitrophenyl)phenols. 4,541,962, Cl. 260-465.00F.

Stamicarbon B.V., Licensing Subsidiary of DSM: *See—*
Corvers, Antonius; and Mulders, Joannes M. C. A., 4,542,220, Cl. 546-341.000.

Standard Oil Company, The: *See—*
Bertolacini, Ralph J.; Hirschberg, Eugene H.; and Modica, Frank S., 4,542,116, Cl. 502-65.000.
Bodolus, Christopher L.; and Woodhead, David A., 4,542,189, Cl. 525-285.000.
Boland, Richard C., 4,542,444, Cl. 361-433.000.
Curatolo, Benedict S.; Sentman, Robert C.; and Coffey, Gerald P., 4,542,205, Cl. 528-336.000.
Jones, Loyd W.; and Alkire, John D., 4,541,946, Cl. 252-189.000.

Standbro, William D.: *See—*
Parker, John G.; and Standbro, William D., 4,541,438, Cl. 128-664.000.

Staniland, Philip A.: *See—*
Cogswell, Frederic N.; and Staniland, Philip A., 4,541,884, Cl. 156-166.000.

Stanley, Bedford F. Portable water conditioner having separate containers for different conditioning materials. 4,541,926, Cl. 210-87.000.

Stanton, Austin N. Watercraft having water jet lift. 4,541,357, Cl. 114-67.00R.

Stapp, Paul R., to Phillips Petroleum Company. Dearsenating of shale oil with polyacrylamides. 4,541,918, Cl. 208-87.000.

Starkie, Alan H.: *See—*
Robinton, Michael A.; and Starkie, Alan H., 4,542,354, Cl. 332-11.00D.

Starnes, R. Emory, Jr., to Southwire Company. Self-sealing, self-cleaning sight glass. 4,541,277, Cl. 73-432.00R.

Starr, Thomas J. J.: *See—*
Beckner, Mark W.; and Starr, Thomas J. J., 4,542,380, Cl. 340-825.500.

State of Oregon acting by and through State Board of Higher Education for and on behalf of Oregon State University, The: *See—*
Thomas, Larry C., 4,541,269, Cl. 73-23.100.

Steen, Hans F.: *See—*
Delligatii, Patrick; and Steen, Hans F., 4,542,386, Cl. 346-140.00R.

Stegherr, Ludolf. Method and apparatus for machining, preferably milling or grinding of edges and roundings of workpieces in a single machine cycle. 4,541,466, Cl. 144-363.000.

Steinbiss, Eberhard: *See—*
Becker, Jorgen; Hendricks, Arno; Herchenbach, Horst; Steinbiss, Eberhard; and Rensinghoff, Werner, 4,541,245, Cl. 60-648.000.

Steinbock GmbH: *See—*
Kollmannsberger, Otto; and Schmid, Martin, 4,542,374, Cl. 340-648.000.

Steinbrenner, Ulrich; and Gunther, Dieter, to Robert Bosch GmbH. Method and apparatus for determining an injection moment during a start process in an internal combustion engine. 4,541,390, Cl. 123-491.000.

Steinman, Arnold J.: *See—*
Gehlke, Scott J. S.; Yost, Michael G.; and Steinman, Arnold J., 4,542,434, Cl. 361-231.000.

Steklenski, David J.; and Littman, Jon E., to Eastman Kodak Company. Antistatic compositions comprising polymerized alkylene oxide and alkali metal salts and elements thereof. 4,542,095, Cl. 430-527.000.

Stephens, Peter H. Method for creating and viewing a composite three-dimensional design. 4,541,180, Cl. 33-18.00R.

Stephens, Stanley W.: *See—*
Grenfell, Julian P.; and Stephens, Stanley W., 4,542,319, Cl. 313-546.000.

Sterling Drug Inc.: *See—*
Gorman, William G.; Popp, Karl F.; Galloway, Jennifer C.; and Sedlock, David M., 4,542,125, Cl. 514-57.000.

Stern, Richard A.; and Babbitt, Richard W., to United States of America, Army. Dielectric waveguide ferrite resonance isolator. 4,542,357, Cl. 333-24.200.

Stewart, David G.: *See—*
Morris, George E.; Nay, Barry; and Stewart, David G., 4,542,117, Cl. 502-66.000.

Stewart, Franklin D. Double row shingle alignment fixture. 4,541,217, Cl. 52-518.000.

Stiff, Anthony J.: *See—*
Norton, John H. R.; Rebello, Peter R.; Kavonic, Clifford M.; and Stiff, Anthony J., 4,541,835, Cl. 44-53.000.
Norton, John H. R.; Rebello, Peter R.; Kavonic, Clifford M.; and Stiff, Anthony J., 4,541,837, Cl. 44-53.000.

Stiles, Carl A., to Dayco Corporation. Belt construction, transverse belt element therefor and method of making the same. 4,541,822, Cl. 474-201.000.

Stockburger, Hermann; and Winderlich, Hans-Georg. Method of producing a controlled number of authorization members. 4,542,465, Cl. 364-468.000.

Stockdale, Trevor J.: *See—*
Churchill, John E.; and Stockdale, Trevor J., 4,541,291, Cl. 73-864.250.

Stockton, Neville R. T. Conveyor belt scraper. 4,541,523, Cl. 198-499.000.

Stodieck, Robert W.: *See—*
McTavish, Mary S.; Stodieck, Robert W.; and Doljack, Frank A., 4,542,365, Cl. 338-20.000.

Stoll, Rudi. Safety lock for automobiles. 4,541,257, Cl. 70-247.000.

Stolle Research and Development Corporation, The: *See—*
Tice, Thomas R.; Lewis, Danny H.; Cowsar, Donald R.; and Beck, Lee R., 4,542,025, Cl. 424-78.000.

Storage Technology Partners II: *See—*
Wilkinson, Richard A., Jr.; Hunt, William C.; and Rickert, David W., 4,542,426, Cl. 360-97.000.
Ziegler, William R. A.; and MacAnally, Richard B., 4,542,495, Cl. 369-273.000.

Stoudt, George W.: *See—*
Boone, Jacob J.; and Stoudt, George W., 4,542,045, Cl. 427-236.000.

Stout, Gregg W.: *See—*
Wetzel, Rodney J.; and Stout, Gregg W., 4,541,486, Cl. 166-297.000.

Strack, Hans; Kleinschmit, Peter; and Parr, Ehrfried, to Degussa Aktiengesellschaft. Zeolite granulate, process for its production. 4,542,115, Cl. 502-64.000.

Strandberg, Hans: *See—*
Elmqvist, Hakan; and Strandberg, Hans, 4,541,430, Cl. 128-419.0PG.

Strauss, Helmut, to Hudson Universal Ltd. Display rack for sunglasses or similar articles. 4,541,534, Cl. 211-13.000.

Straw, Robert L.: *See—*
Brandyberry, Robert E.; Forbes, Mark M.; Gloyeski, David D.; Greafnitz, Russell F.; Phillips, Glen R.; Straw, Robert L.; Stricker, Kevin L.; Szabela, William A.; Webeck, Richard R.; Mayfield, Glenn A.; and Vollmer, William L., 4,542,469, Cl. 364-483.000.

Strege, Gary: *See—*
Karst, Daniel; Strege, Gary; and Larsen, E. Richard, 4,541,409, Cl. 126-299.00D.

Stricker, Kevin L.: *See—*
Brandyberry, Robert E.; Forbes, Mark M.; Gloyeski, David D.; Greafnitz, Russell F.; Phillips, Glen R.; Straw, Robert L.; Stricker, Kevin L.; Szabela, William A.; Webeck, Richard R.; Mayfield, Glenn A.; and Vollmer, William L., 4,542,469, Cl. 364-483.000.

Stroman, Fritz: *See—*
Engel, Jurgen; Kleemann, Axel; Posselt, Klaus; Stroman, Fritz; and Thiemer, Klaus, 4,542,159, Cl. 514-653.000.

Strutt, Derek W., to Ford Motor Company. Adjustable steering column mounting. 4,541,298, Cl. 74-493.000.

Stryer, Lubert; and Glazer, Alexander N., to Leland Stanford Jr. Univ., The Board of Trustees of the. Phycobiliprotein fluorescent conjugates. 4,542,104, Cl. 436-536.000.

Stuber, Wayne G.: *See—*
Newton, Charles L.; Stuber, Wayne G.; and Patterson, Michael A., 4,541,852, Cl. 62-11.000.

Stuhlmann, Wolfgang, to Westinghouse FANAL-Schaltgeraete GmbH. Pressure sensor. 4,541,283, Cl. 73-724.000.

Stumpfi, Werner; Bettinger, Gunter; Engel, Friedrich; Fitterer, Horst; Kreimes, Norbert; Pfefferkorn, Dietmar; Schaffer, Norbert; and Schmidts, Kurt, to BASF Aktiengesellschaft. Hub for magnetic tape cassettes, especially compact cassettes, and magnetic tape cassette possessing one or more such hubs. 4,541,587, Cl. 242-197.000.

Sturgeon, Bennett: *See—*
Gray, George W.; Lacey, David; Pellatt, Martin G.; and Sturgeon, Bennett, 4,542,230, Cl. 560-01.000.
Sturman, Oded E.; Grill, Benjamin; and Harrison, Lynn. Pressure regulators. 4,541,454, Cl. 137-505.410.
Stutz, Anton, to Sandoz Ltd. Silyl-alkyn-en-ylamine derivatives. 4,542,022, Cl. 514-63.000.
Styer, Richard D.: *See—*
Heidler, Lester D.; Styer, Richard D.; and Hunsberger, Enos R., 4,541,930, Cl. 210-344.000.
Suburban Tool, Inc.: *See—*
Bailey, Donald H., 4,542,473, Cl. 364-560.000.
Suda, Hideaki: *See—*
Yamamoto, Osamu, Suda, Hideaki; Nishiuchi, Kihachiro; Izumi, Misao; and Ejima, Noriyoshi, 4,542,067, Cl. 428-237.000.
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Fink, Herbert; Huebner, Klaus; Markert, Gerhard; and Suetterlin, Norbert, 4,542,175, Cl. 524-516.000.
Sueyasu, Masanobu: *See—*
Okane, Kohji; Nakajima, Hidemasa; Okamura, Shozo; Sueyasu, Masanobu; and Manago, Takashi, 4,541,617, Cl. 266-65.000.
Sugahara, Takayuki: *See—*
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Sugai, Manabu; Kagohashi, Yasuyoshi; and Aoki, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Magnetic recording and reproducing apparatus. 4,541,589, Cl. 242-200.000.
Suganuma, Saburo; Kataoka, Hiroyuki; and Arai, Yoshio, to Fuji Xerox Co., Ltd. Method of processing documents. 4,542,378, Cl. 340-734.000.
Sugi, Nagatoshi: *See—*
Kitahara, Shizuo; Fujii, Toshihiro; and Sugi, Nagatoshi, 4,542,190, Cl. 525-332.600.
Sugimoto, Hiroaki: *See—*
Ueno, Katsuji; Sugimoto, Hiroaki; and Hayatsu, Kazuo, 4,542,203, Cl. 528-126.000.
Sugimoto, Hiroshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Computerized tomography apparatus. 4,542,519, Cl. 378-19.000.
Sugita, Hiroshi: *See—*
Ono, Satoshi; Sugita, Hiroshi; and Hiramitsu, Tetsushi, 4,541,301, Cl. 74-484.00R.
Sugiura, Katsuhiko, to Fuji Jukogyo Kabushiki Kaisha. System for controlling the ignition timing of an engine. 4,541,381, Cl. 123-407.000.
Sugiyama, Takao: *See—*
Ichikawa, Tomohiko; Sugiyama, Takao; and Manaka, Masao, 4,541,441, Cl. 130-27.00T.
Suguro, Yoshihiro; and Nagamoto, Masanaka, to Ricoh Company, Ltd. Diazo-type thermosensitive recording material. 4,542,394, Cl. 346-209.000.
Sullivan, Sean; and Edwards, Roger A., to Rediffusion Simulation Limited. Acousto-optic scanners. 4,541,694, Cl. 350-371.000.
Sullivan, Timothy A.; Morgan, Gregory L.; and Warner, Arthur S., to Owens-Corning Fiberglas Corporation. Apparatus for producing glass fibers. 4,541,853, Cl. 65-12.000.
Sumitomo Chemical Company, Limited: *See—*
Fukushima, Nobuo; Kitamura, Shuji; Nakae, Kiyohiko; Kotani, Kozo; Terazawa, Takayuki; and Nakarai, Toyoaki, 4,542,061, Cl. 428-220.000.
Minai, Masayoshi; Katsura, Tadashi; Hamada, Kazuhiko; and Suzukamo, Gohfu, 4,542,235, Cl. 562-401.000.
Ueno, Katsuji; Sugimoto, Hiroaki; and Hayatsu, Kazuo, 4,542,203, Cl. 528-126.000.
Sumitomo Electric Industries, Ltd.: *See—*
Sato, Mitomu; Nakatani, Toshikazu; Yamashita, Katsumi; and Ogata, Terumi, 4,541,145, Cl. 24-19.000.
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Sumitomo Metal Industries: *See—*
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Sumitomo Rubber Industries, Ltd.: *See—*
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Sun Refining and Marketing Company: *See—*
Hsu, Chao-Yang; Lyons, James E.; and Ellis, Paul E., Jr., 4,542,242, Cl. 568-454.000.
Sun Tech, Inc.: *See—*
Hsu, Chao-Yang; and Ellis, Paul E., Jr., 4,542,119, Cl. 502-153.000.
Hsu, Chao-Yang; and Ellis, Paul E., Jr., 4,542,120, Cl. 502-153.000.
Sundstrand Corporation: *See—*
Chetty, P. R. K.; Dhyanchand, John; and Thollot, Pierre, 4,542,440, Cl. 361-111.000.
Hucker, David J., 4,542,451, Cl. 363-132.000.
Sunspool Corporation: *See—*
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Surtees, Leo: *See—*
Jones, Tristan; and Surtees, Leo, 4,541,356, Cl. 114-61.000.
Susa, Ermanno: *See—*
Mayr, Adolfo; Giannini, Umberto; Susa, Ermanno; Longi, Paolo; Giachetti, Ettore; and DeLuca, Domenico, 4,542,198, Cl. 526-125.000.
Susman, Sherman; Boehm, Leah; Volin, Kenneth J.; and Delbacq, Charles J., to United States of America, Energy. Glass capable of ionic conduction and method of preparation. 4,542,108, Cl. 501-40.000.
Sussman, Howard. Combination bath and shower accessory. 4,541,131, Cl. 4-596.000.
Sussner, Heinrich: *See—*
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Suyama, Tadakazu: *See—*
Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; Inoue, Yoshihisa; Naito, Youichiro; and Suyama, Tadakazu, 4,542,147, Cl. 514-411.000.
Suzukamo, Gohfu: *See—*
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Suzuki, Hiroshi; Natsuhara, Masao; and Kurusu, Chisato, to Matsushita Electronics Corporation. Cathode ray tube. 4,542,320, Cl. 315-15.000.
Suzuki, Kiyosuke: *See—*
Watanabe, Haruo; Seto, Junetsu; Suzuki, Kiyosuke; and Fukuma, Toshiaki, 4,542,084, Cl. 430-46.000.
Suzuki Motor Co., Ltd.: *See—*
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Suzuki, Nobuyuki: *See—*
Kataoka, Hiroyuki; Yamada, Masanori; and Suzuki, Nobuyuki, 4,541,703, Cl. 354-415.000.
Suzuki, Osamu; Morita, Takayuki; Muramatsu, Shigeru; and Asai, Isao, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Method of transferring yarn packages in a spinning frame. 4,541,577, Cl. 242-35.50A.
Suzuki, Takayuki: *See—*
Kageyama, Minoru; Hirose, Takeo; Matsui, Tadao; Ogino, Hiroshi; Yoshida, Shiro; and Suzuki, Takayuki, 4,541,371, Cl. 123-65.0PE.
Suzuki, Tamotsu; Nishikawa, Sumio; and Tatsuta, Sumitaka, to Fuji Photo Film Co., Ltd. Photographic silverhalide material containing two subbing layers. 4,542,093, Cl. 430-523.000.
Suzuki, Tenji: *See—*
Yamamoto, Keniti; Suzuki, Tenji; and Sanada, Yukitomo, 4,541,302, Cl. 74-501.00R.
Suzuki, Toshitake: *See—*
Saito, Toranosuke; Kitani, Masakatu; Ishibashi, Takashi; Arai, Naoto; Murakami, Takeshi; and Suzuki, Toshitake, 4,542,395, Cl. 346-216.000.
Svartz, Bjorn O. Juvenile vehicle. 4,541,642, Cl. 280-3.000.
Swanson, Eric J., to AT&T Bell Laboratories. Switched capacitor feedback sample-and-hold circuit. 4,542,304, Cl. 307-353.000.
Sweeney, William T.: *See—*
Oda, Ronald L.; and Sweeney, William T., 4,541,850, Cl. 55-204.000.
Swetnam, Norman T., to General Electric Company. Wiring device covers. 4,541,538, Cl. 220-3.800.
Sybron Corporation: *See—*
Olsen, Robert A., 4,541,802, Cl. 433-126.000.
Syntex Pharmaceuticals International Limited: *See—*
Schloemer, George C., 4,542,237, Cl. 562-466.000.
Syntex (U.S.A.) Inc.: *See—*
Broadhead, James H.; Wilbur, Lawrence A.; and Sams, Ivan E., 4,541,671, Cl. 297-330.000.
Clark, Robin D., 4,542,027, Cl. 514-459.000.
Synthesis Engineering Ltd.: *See—*
Corma, Avelino C.; Mifsud, Amparo C.; and Perez, Joaquin P., 4,542,002, Cl. 423-331.000.
Szabela, William A.: *See—*
Brandyberry, Robert E.; Forbes, Mark M.; Gloyeski, David D.; Greafnitz, Russell F.; Phillips, Glen R.; Straw, Robert L.; Stricker, Kevin L.; Szabela, William A.; Webeck, Richard R.; Mayfield, Glenn A.; and Vollmer, William L., 4,542,469, Cl. 364-483.000.
Szejtli, Jozsef; Liptak, Andras; Nanasi, Pal; Fugedi, Peter; Jodal, Ildiko; Kandra, Lili; and Janossy, Lorant, to Consortium Fur Elektrochemische Industrie GmbH. Process for the manufacture of heptakis-[2,6-di-O-methyl]-beta-cyclodextrin. 4,542,211, Cl. 536-103.000.
T. J. Electronics, Inc.: *See—*
Holman, Howard E.; and Turner, Roy D., 4,541,684, Cl. 339-14.00L.
T. S. Simms & Co. Limited: *See—*
Allison, Philip J., 4,541,140, Cl. 15-230.110.
Tabuchi, Akiko, to Kazuhisa Tabuchi. Reclining bed for childbirth. 4,541,622, Cl. 269-325.000.
Tachibana, Hiromitsu: *See—*
Shibahara, Hiroshi; and Tachibana, Hiromitsu, 4,542,204, Cl. 528-140.000.
Taft, Phillip A.: *See—*
Reynolds, Desmond H. J.; and Taft, Phillip A., 4,541,610, Cl. 251-129.210.
Taguchi, Nobuyoshi: *See—*
Hotta, Shu; Shimizu, Tokihiko; and Taguchi, Nobuyoshi, 4,541,830, Cl. 8-471.000.
Taira, Kazuo: *See—*
Imazu, Katsuhiro; Matsubayashi, Hiroshi; Horiguchi, Makoto; Taira, Kazuo; Kobayashi, Seishichi; and Ueno, Hiroshi, 4,541,546, Cl. 220-456.000.
Taisho Pharmaceutical Co., Ltd.: *See—*
Tomisawa, Kazuyuki; Kameo, Kazuya; Matsunaga, Toru; Saito, Shiuji; Nakashima, Yoshimoto; and Sata, Kaoru, 4,541,959, Cl. 260-455.00R.

Taiyo Yuden Co., Ltd.: *See*—
Yamaoka, Nobutatsu; Tsukada, Akira; and Sasazawa, Kazuo, 4,541,974, Cl. 264-61.000.
Takach, Eugene J., Jr., to Honeywell Inc. Data distribution apparatus. 4,542,372, Cl. 340-500.000.
Takada, Kazuo; and Saito, Seitoku, to TDK Electronics Co., Ltd. Magnetic recording medium. 4,542,062, Cl. 428-336.000.
Takagi, Hiroshi: *See*—
Onoe, Yoshinori; Takagi, Hiroshi; Ikenaga, Satoru; Tsuchiya, Hiraku; Murakami, Shohei; and Nakao, Masakazu, 4,541,473, Cl. 164-444.000.
Takahara, Takao; and Hisanaga, Yorisato, to Daikin Kogyo Co., Ltd. Fluorine-containing uridine derivative and preparation and use thereof. 4,542,209, Cl. 536-23.000.
Takahashi, Eisaku: *See*—
Ohsugi, Katsuhisa; Ichida, Junji; and Takahashi, Eisaku, 4,542,154, Cl. 514-475.000.
Takahashi, Hidenori: *See*—
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Takahashi, Hiroshi; Nishioka, Akira; Tokunaga, Fumihiro; Aotani, Yoshimasa; and Aono, Koichiro, to Fuji Photo Film Co., Ltd. Negative working diazo light-sensitive composition with oxonol dye and lithographic printing plate using the same. 4,542,085, Cl. 430-158.000.
Takahashi, Osamu: *See*—
Toya, Ichizo; and Takahashi, Osamu, 4,542,092, Cl. 430-510.000.
Takahashi, Shinji: *See*—
Kawarabashi, Tsukasa; and Takahashi, Shinji, 4,541,578, Cl. 242-35.50A.
Takahashi, Takao: *See*—
Yoneyama, Shigeyuki; Nakano, Kenji; Moriwaki, Hisayoshi; and Takahashi, Takao, 4,542,418, Cl. 360-19.100.
Takahashi, Tomonori: *See*—
Matsui, Minoru; and Takahashi, Tomonori, 4,542,112, Cl. 501-120.000.
Takahashi, Toru: *See*—
Iwakura, Mitsuo; Takahashi, Toru; and Ono, Kensaku, 4,542,339, Cl. 324-121.00R.
Takahashi, Toshiaki: *See*—
Momose, Haruhiko; Takahashi, Toshiaki; Hoshino, Yasushi; Matsushima, Kohji; and Yagi, Michio, 4,541,702, Cl. 354-400.000.
Takahashi, Yuji, to Canon Kabushiki Kaisha. Recording apparatus. 4,541,711, Cl. 355-14.00R.
Takamatsu Electric Works, Ltd.: *See*—
Kato, Kazuaki; and Nishi, Yuzo, 4,542,363, Cl. 337-31.000.
Takamiya, Kikuzo; and Todoroki, Hiroshi, to Bridgestone Cycle Co., Ltd. Bicycle frame. 4,541,648, Cl. 280-281.00R.
Takano, Masamitu: *See*—
Matsunaga, Atsushi; Kusayanagi, Sampo; Takano, Masamitu; and Kato, Yutaka, 4,542,246, Cl. 585-6.600.
Takasago, Masahiro; Maeda, Takeshi; Uno, Motoo; and Mizoguchi, Yasumitsu, to Hitachi, Ltd. Optical information disc apparatus with autofocusing servo system. 4,542,491, Cl. 369-45.000.
Takashima, Masaru. Method for the gunning of refractories. 4,541,971, Cl. 264-30.000.
Takashima, Masatake: *See*—
Fuse, Shigeru; Takashima, Masatake; Fukuda, Shinichiro; and Shibata, Hiroyuki, 4,542,412, Cl. 358-260.000.
Takasu, Yasuhito: *See*—
Hosoe, Katsuharu; Takasu, Yasuhito; and Iwata, Toshiharu, 4,541,382, Cl. 123-425.000.
Takatori Machinery Mfg. Co., Ltd.: *See*—
Horita, Teruyuki; and Kawamura, Keiji, 4,541,351, Cl. 112-262.200.
Takayanagi, Shinji: *See*—
Iwai, Kazuhiro; Masuda, Tatsuo; and Takayanagi, Shinji, 4,541,502, Cl. 180-217.000.
Takeda Chemical Industries, Ltd.: *See*—
Hozumi, Motoo; Nomura, Hiroaki; and Yoshioka, Yoshio, 4,542,219, Cl. 546-22.000.
Takegawa, Takafumi: *See*—
Oie, Naoyuki; Koyama, Hiromichi; and Takegawa, Takafumi, 4,541,847, Cl. 55-124.000.
Takehara, Hideaki, to Victor Company of Japan, Limited. Pickup stylus having fused diamond and ceramic bodies with conductive surfaces for capacitance disk records. 4,542,493, Cl. 369-126.000.
Takemura, Yasuhiko: *See*—
Saito, Kazuycshi; Iida, Taketoshi; Shirasaka, Toshio; and Takemura, Yasuhiko, 4,541,435, Cl. 128-660.000.
Takenaga, Motoi: *See*—
Iino, Shinji; Maruyama, Kensaku; Takenaga, Motoi; Muramoto, Kazuhiko; and Tsuhako, Mitsutomo, 4,542,001, Cl. 423-311.000.
Takenoya, Hideaki; and Honda, Kazunori, to Janome Sewing Machine Industry Co., Ltd. Feed reference point balancing device of sewing machine. 4,541,354, Cl. 112-314.000.
Takesako, Yoshinobu: *See*—
Irie, Hiroyuki; Ide, Susumu; Nonomura, Kinzo; Watanabe, Masanori; and Takesako, Yoshinobu, 4,542,322, Cl. 315-366.000.
Takeuchi, Koji; Abe, Masahiro; Ito, Nobuo; and Hirai, Kiyomiki, to Ajinomoto Co., Inc. Latent curing agents for epoxy resins. 4,542,202, Cl. 528-96.000.
Takeuchi, Masato; Tobita, Hiroshi; Okabe, Sigeru; Okada, Hideo; and Tonami, Munehiko, to Hitachi, Ltd. Fuel cell. 4,542,079, Cl. 429-39.000.
Takeuchi, Shigekazu: *See*—
Yoshida, Seiichi; and Takeuchi, Shigekazu, 4,542,060, Cl. 428-287.000.
Takeyama, Akira; Tazaki, Kenshi; Nojima, Satoshi; Aritaka, Norihiro; and Mita, Teruyoshi, to Fujitsu Limited. Loop transmission system and method of controlling the loop-back condition thereof. 4,542,496, Cl. 370-16.000.
Talkies International Corp.: *See*—
Sadorus, George P., 4,541,188, Cl. 40-152.100.
Tam, Jimmy W.; Odegaard, Gary W.; Scherer, William C.; and Lonneman, Alan P., to Red Devil, Inc. Dispenser with sniff device and method. 4,541,548, Cl. 222-48.000.
Tamura, Gakuzo: *See*—
Hosokawa, Tomoyoshi; Matsuura, Ikutoshi; Takahashi, Hidenori; Ando, Kunio; and Tamura, Gakuzo, 4,542,143, Cl. 514-356.000.
Tamura, Setsuo; Motonaga, Kenjiro; Mizokawa, Takumi; Tanaka, Kozo; Kawashima, Katsumi; Hiwatashi, Takaaki; and Sugahara, Takayuki, to Kabushiki Kaisha Kobe Seiko Sho. Pulverizing, drying and transporting system for injecting a pulverized fuel into a blast furnace. 4,541,572, Cl. 241-31.000.
Tamura, Takashi; and Ikeda, Masami, to Sanyo Electric Co., Ltd. Infrared detector and method of producing the same. 4,542,294, Cl. 250-338.000.
Tan, Tai Ho; and Williams, Arthur H., to United States of America, Energy. Apparatus for recording emissions from a rapidly generated plasma from a single plasma producing event. 4,542,290, Cl. 250-213.0VT.
Tanabe Seiyaku Co., Ltd.: *See*—
Samejima, Masayoshi; Hirata, Goichi; and Ishibashi, Takashi, 4,542,042, Cl. 427-213.360.
Tanaka, Kozo: *See*—
Tamura, Setsuo; Motonaga, Kenjiro; Mizokawa, Takumi; Tanaka, Kozo; Kawashima, Katsumi; Hiwatashi, Takaaki; and Sugahara, Takayuki, 4,541,572, Cl. 241-31.000.
Tanaka, Masaki: *See*—
Nakazawa, Yuzo; Ono, Kazuo; Tanaka, Masaki; Morita, Takao; and Kurosaki, Takefumi, 4,542,356, Cl. 333-195.000.
Tanaka, Shun-ichiro; Mizunoya, Nobuyuki; and Abe, Shigeo, to Thomson CSF; and Compagnie d'Electronique et de Piezo-Electricite. Ceramic bonded structure and method of manufacturing the same. 4,542,073, Cl. 428-446.000.
Tanaka, Toshiaki, to Nissan Motor Co., Ltd. Diesel engine swirl chamber having improved multiple transfer passage arrangement. 4,541,375, Cl. 123-261.000.
Tanaka, Toshimitsu; Abe, Ryoji; and Asanomi, Koji, to Mazda Motor Corporation. Breather arrangement for internal combustion engine. 4,541,399, Cl. 123-573.000.
Taniguti, Ryosuke, to Mitsubishi Denki Kabushiki Kaisha. Ground detection arrangement for an A.C. generator. 4,542,468, Cl. 364-481.000.
Tanimoto, Akira: *See*—
Hashimoto, Shintaro; and Tanimoto, Akira, 4,542,478, Cl. 364-900.000.
Tanizaki, Hiroyuki: *See*—
Ebihara, Sakae; Tanizaki, Hiroyuki; Sato, Kazuma; and Kanazawa, Yuzo, 4,541,667, Cl. 297-64.000.
Tanji, Hiroshi; Iwata, Michitaka; and Sato, Hideo, to Asahi Kasei Kogyo Kabushiki Kaisha. Uniformly dyeable nylon 66 fiber and process for the production thereof. 4,542,063, Cl. 428-364.000.
Tanneniaufer, Gerd; Frank, Julius; and Forsting, Bernhard, to Ford Motor Company. Arrangement for controlling an air duct. 4,541,611, Cl. 251-228.000.
Tanner, David P.; Morel, Don L.; and Gay, Robert R., to Atlantic Richfield Company. Gridded thin film solar cell. 4,542,255, Cl. 136-249.000.
Tanonis, David R.; and Darbut, Alexander L., to Rubbermaid Incorporated; and Polymer Engineering Inc. Microwave browning wares and method for the manufacture thereof. 4,542,271, Cl. 219-10.55E.
Tanzawa, Katsujirou: *See*—
Furukawa, Kazuyoshi; Shimbo, Masaru; Fukuda, Kiyoshi; and Tanzawa, Katsujirou, 4,542,105, Cl. 501-22.000.
Tashiro, Tsuneo: *See*—
Nagashima, Masayoshi; Yamane, Hiroshi; Nonoyama, Makoto; and Tashiro, Tsuneo, 4,542,387, Cl. 346-76.0PH.
Tashiro, Yasuhisa; and Aoki, Shigeru, to Nippon Kayaku Kabushiki Kaisha. Process for preparing optically active phenylalanine. 4,542,236, Cl. 562-401.000.
Tatsuno, Tsuneo: *See*—
Honma, Katsuhiko; Tatsuno, Tsuneo; and Okada, Hiroshi, 4,541,975, Cl. 264-62.000.
Tatsuta, Sumitaka: *See*—
Suzuki, Tamotsu; Nishikawa, Sumio; and Tatsuta, Sumitaka, 4,542,093, Cl. 430-523.000.
Taylor, Arthur F. D. S., to Flexible Laser Systems Limited. Laser material processor. 4,542,278, Cl. 219-121.0LV.
Tazaki, Kenshi: *See*—
Takeyama, Akira; Tazaki, Kenshi; Nojima, Satoshi; Aritaka, Norihiro; and Mita, Teruyoshi, 4,542,496, Cl. 370-16.000.
Tazaki, Shigemitsu, to Canon Kabushiki Kaisha. Electronic equipment with a printer. 4,542,384, Cl. 346-33.00R.
TDK Electronics Co., Ltd.: *See*—
Takada, Kazuo; and Saito, Seitoku, 4,542,062, Cl. 428-336.000.
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Technar, Incorporated: *See*—
Bell, Lon E.; and Gruber, William P., 4,541,731, Cl. 374-117.000.
Technicorp: *See*—
Tomasulo, Walter, 4,542,345, Cl. 324-451.000.

Tektronix, Inc.: *See*—
Bruning, John W.; and Fuller, Stephen C., 4,542,390, Cl. 346-140.00R.
Buzak, Thomas S., 4,541,691, Cl. 350-335.000.
Van Domelen, Joseph D., 4,541,683, Cl. 339-126.00R.
Telectronics Pty. Ltd.: *See*—
Ibrahim, Ibrahim H.; and Daly, Christopher N., 4,541,431, Cl. 128-419.0PT.
Telefonaktiebolaget LM Ericsson: *See*—
Schmidt, Henning M.; Malmkvist, Hans G.; Aksberg, Arvi J.; and Johansson, Jan H., 4,542,264, Cl. 179-111.00E.
Terazawa, Takayuki: *See*—
Fukushima, Nobuo; Kitamura, Shuji; Nakae, Kiyohiko; Kotani, Kozo; Terazawa, Takayuki; and Nakarai, Toyoaki, 4,542,061, Cl. 428-220.000.
Terbrack, William H., to Hughes Aircraft Company. Low input voltage precision DC-to-DC voltage converter circuit. 4,542,330, Cl. 323-222.000.
Terrot Strickmaschinen GmbH: *See*—
Schindele, Alfred; and Lotze, Herbert, 4,541,254, Cl. 66-223.000.
Terumo Kabushiki Kaisha: *See*—
Ishizaka, Hideo, 4,541,734, Cl. 374-169.000.
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Janda, Jiri, 4,542,494, Cl. 369-256.000.
Tessier, Jean: *See*—
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Tetra Pak International AB: *See*—
Rausing, Hans A., 4,541,463, Cl. 141-147.000.
Tetsuya, Iwao; Reiji, Hirai; and Yoshinori, Ashida, to Mitsui Toatsu Chemicals, Inc. Process for preparing silicon hydrides. 4,542,005, Cl. 423-347.000.
Texaco Inc.: *See*—
Morduchowitz, Abraham; and Yaghmaie, Farrokh, 4,541,937, Cl. 252-8.55D.
Texas Gas Development Corporation: *See*—
Darilek, Glenn T.; and Cooper, Edward H., Jr., 4,542,344, Cl. 324-326.000.
Texas Instruments Incorporated: *See*—
Havemann, Robert H.; and Pollack, Gordon P., 4,541,167, Cl. 29-576.00W.
Patrick, Michael J.; and Snider, David M., 4,542,453, Cl. 364-200.000.
Textilma AG: *See*—
Villa, Carlo, 4,541,461, Cl. 139-442.000.
Thaler, Arnold; and Kin, Lai, to Windmere Corporation. Electrical appliance with delayed warning alarm. 4,542,284, Cl. 219-506.000.
Theis, Christoph; and Fickert, Gudrun, to Dynamit Nobel Aktiengesellschaft. Method for preparing cyanacetaldehyde acetals. 4,541,960, Cl. 260-464.000.
Thelen, William: *See*—
Moul, Robert A.; and Thelen, William, 4,542,504, Cl. 370-100.000.
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Engel, Jurgen; Kleemann, Axel; Posselt, Klaus; Stroman, Fritz; and Thiemer, Klaus, 4,542,159, Cl. 514-653.000.
Thimel-Baumer, Heidi. Preparation of anti-T-lymphocyte globulin. 4,541,953, Cl. 260-112.00B.
Tholander, Lars H. G., to Aktiebolaget IRO. Weft yarn storing, feeding and measuring device, preferably for jet weaving machines. 4,541,462, Cl. 139-452.000.
Thollot, Pierre: *See*—
Chetty, P. R. K.; Dhyanchand, John; and Thollot, Pierre, 4,542,440, Cl. 361-111.000.
Thomas, Alun. Internal combustion engine. 4,541,376, Cl. 123-280.000.
Thomas, Geoffrey; and Kalkipsakis, Charalambos G., to Wrightcel Limited. Flexible container with resealable opening. 4,542,530, Cl. 383-66.000.
Thomas J. Lipton Inc.: *See*—
Butcher, Ian; Carrick, Gordon S.; and Hillman, Kevin P., 4,542,028, Cl. 426-100.000.
Thomas, John E.: *See*—
Anglin, Jeanne M.; Edwards, Richard R.; and Thomas, John E., 4,542,056, Cl. 428-116.000.
Thomas, Larry C., to State of Oregon acting by and through State Board of Higher Education for and on behalf of Oregon State University, The. Gas chromatograph detector. 4,541,269, Cl. 73-23.100.
Thomassen & Drijver-Verblifa N.V.: *See*—
Kleinnibbelink, Gerrit J.; and Timmer, Anton O., 4,542,296, Cl. 250-359.100.
Thompson, Leslie L., to Combustion Engineering, Inc. Thermal printer contrast control. 4,542,281, Cl. 219-216.000.
Thompson, Randall, Jr. Tide activated generator. 4,541,242, Cl. 60-506.000.
Thomson-CSF: *See*—
Arditty, Herve ; and Rollin, Michel, 4,542,338, Cl. 324-117.00R.
Caugant, Jean; and Dale, Jacques, 4,541,293, Cl. 74-89.180.
Demeure, Alain, 4,542,455, Cl. 364-200.000.
Leterme, Dominique; and Le Merer, Jean-Pierre, 4,542,492, Cl. 369-46.000.
Tanaka, Shun-ichiro; Mizunoya, Nobuyuki; and Abe, Shigeo, 4,542,073, Cl. 428-446.000.
Thomson, Timothy; and Glomski, Ronald L., to Dow Chemical Company, The. Dispersants for aqueous slurries. 4,541,965, Cl. 260-505.00C.
Thone, Heinrich: *See*—
Schubert, Hermann; Thone, Heinrich; and Kasmader, Richard, 4,541,478, Cl. 164-440.000.
Thorn EMI plc: *See*—
Hall, Robert; and Ainsworth, Thomas S., 4,542,316, Cl. 313-318.000.
Thornton, Martin Q.: *See*—
Caverly, Lendall R., Jr.; Gleason, Robert F.; Hadfield, Don A.; McNerney, Norman E.; Meade, Daniel A.; Richardson, Alfred G.; Semitros, Nicholas; and Thornton, Martin Q., 4,541,970, Cl. 264-1.500.
Threewitt, N. Bruce: *See*—
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Thurston, Larry R.: *See*—
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Tice, Thomas R.; Lewis, Danny H.; Cowsar, Donald R.; and Beck, Lee R., to Stolle Research and Development Corporation, The; and Southern Research Institute. Injectable, long-acting microparticle formulation for the delivery of anti-inflammatory agents. 4,542,025, Cl. 424-78.000.
Tillery, Thomas H. Golf ball teeing apparatus. 4,541,632, Cl. 273-201.000.
Timken Company, The: *See*—
Leibensperger, Robert L.; and Reed, Karl W., 4,541,738, Cl. 384-470.000.
Timm, Gerald W.; Helms, Richard A.; and Sandford, Donald L., to Dacomed Corporation. Penile prosthesis utilizing patient controlled cam actuator apparatus. 4,541,420, Cl. 128-79.000.
Timmer, Anton O.: *See*—
Kleinnibbelink, Gerrit J.; and Timmer, Anton O., 4,542,296, Cl. 250-359.100.
Tischler, Bernd; and Euerle, Kurt, to KK Automation Klaus Th. Kramer GmbH & Co. Apparatus for loading and/or unloading machine tools or the like. 4,541,762, Cl. 414-32.000.
Tobin, David: *See*—
Armold, Clark W.; Huebner, Michael B.; and Tobin, David, 4,541,933, Cl. 210-780.000.
Tobita, Hiroshi: *See*—
Takeuchi, Masato; Tobita, Hiroshi; Okabe, Sigeru; Okada, Hideo; and Tonami, Munehiko, 4,542,079, Cl. 429-39.000.
Todoroki, Hiroshi: *See*—
Takamiya, Kikuzo; and Todoroki, Hiroshi, 4,541,648, Cl. 280-281.00R.
Todoroki, Masao: *See*—
Kubota, Kazuho; and Todoroki, Masao, 4,541,605, Cl. 249-142.000.
Todoroki, Tsunehiko: *See*—
Fukuda, Katsumi; Ebihara, Masaharu; Hayakumo, Tadahiko; and Todoroki, Tsunehiko, 4,541,326, Cl. 98-40.250.
Toganoh, Shigeo; and Arai, Ryuichi, to Canon Kabushiki Kaisha. Recording medium. 4,542,059, Cl. 428-141.000.
Togawa, Shingo: *See*—
Okumura, Ryuichi; Dohi, Hidemi; and Togawa, Shingo, 4,541,748, Cl. 400-470.000.
Togawa, Tsuneo: *See*—
Nakajima, Taiji; Togawa, Tsuneo; and Koike, Masao, 4,542,031, Cl. 426-307.000.
Tohkairin, Akira: *See*—
Kanamaru, Hisanobu; Tohkairin, Akira; and Kurosawa, Takuzo, 4,541,315, Cl. 82-40.00R.
Tokunaga, Fumihiro: *See*—
Takahashi, Hiroshi; Nishioka, Akira; Tokunaga, Fumihiro; Aotani, Yoshimasa; and Aono, Koichiro, 4,542,085, Cl. 430-158.000.
Tokuno, Masateru; Sawada, Tetsuya; and Mori, Yasuharu, to Rengo Co., Ltd. Web printing apparatus with printing plate cylinder and web speed control. 4,541,335, Cl. 101-181.000.
Tokura, Naomi; and Hasegawa, Yoji, to Nissan Motor Company, Ltd. Exhaust purification apparatus. 4,541,239, Cl. 60-286.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Chabata, Sueji; Nakano, Keiji; Ito, Kichizo; Ueda, Katsuhiko; Iizuka, Hirokazu; Miyako, Hisao; and Fukagawa, Katsumi, 4,542,064, Cl. 428-383.000.
Furukawa, Kazuyoshi; Shimbo, Masaru; Fukuda, Kiyoshi; and Tanzawa, Katsujirou, 4,542,105, Cl. 501-22.000.
Hiraki, Shunichi; Kumamaru, Kuniaki; Koshino, Yutaka; and Yonezawa, Toshio, 4,542,400, Cl. 357-54.000.
Hirata, Hidetoshi, 4,542,273, Cl. 219-10.770.
Iwahashi, Hiroshi; and Asano, Masamichi, 4,542,485, Cl. 365-230.000.
Okado, Takeshi, 4,541,434, Cl. 128-660.000.
Saito, Kazuyoshi; Iida, Taketoshi; Shirasaka, Toshio; and Takemura, Yasuhiko, 4,541,435, Cl. 128-660.000.
Satou, Kouichirou, 4,542,379, Cl. 340-758.000.
Sekiba, Toshinobu, 4,542,401, Cl. 357-71.000.
Sugimoto, Hiroshi, 4,542,519, Cl. 378-19.000.
Tomita, Seiji; Morinaga, Kaoru; and Kotoda, Yoshihiro, 4,542,430, Cl. 360-106.000.
Tsunekawa, Shou, 4,542,527, Cl. 382-52.000.
Watanabe, Yoshihiro, 4,542,287, Cl. 235-379.000.
Yamada, Hisashi; and Shimizu, Shoichi, 4,542,370, Cl. 340-347.0AD.
Tolgyesi, Eva: *See*—
Bresak, Ann F.; and Tolgyesi, Eva, 4,542,014, Cl. 424-70.000.
Tolhurst, Gary A.; and Haugse, Albert L., to Ashland Oil, Inc. Flexibilized polyurethane pipe coating. 4,542,049, Cl. 427-388.100.

Tomasulo, Walter, to Technicorp. Multi-element thermoelectric non-destructive testing device and method. 4,542,345, Cl. 324-451.000.
Tomcufcik, Andrew S.: *See—*
Wright, William B., Jr.; Press, Jeffery B.; and Tomcufcik, Andrew S., 4,542,145, Cl. 514-383.000.
Tomforde, Johann: *See—*
Gallitzendorfer, Josef; Gotz, Hans; Pfeiffer, Peter; and Tomforde, Johann, 4,541,664, Cl. 296-213.000.
Tomisawa, Kazuyuki; Kameo, Kazuya; Matsunaga, Toru; Saito, Shiuji; Nakashima, Yoshimoto; and Sata, Kaoru, to Taisho Pharmaceutical Co., Ltd. Diphenylsulfide derivatives. 4,541,959, Cl. 260-455.00R.
Tomisawa, Osamu: *See—*
Anami, Kenji; Yoshimoto, Masahiko; Shinohara, Hirofumi; and Tomisawa, Osamu, 4,542,486, Cl. 365-230.000.
Tomita, Kimio, to Nissan Motor Company, Ltd. Vacuum actuator with fail-safe system. 4,541,324, Cl. 91-392.000.
Tomita, Masao: *See—*
Honjo, Masahiro; and Tomita, Masao, 4,542,416, Cl. 360-10.300.
Tomita, Seiji; Morinaga, Kaoru; and Kotoda, Yoshihiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Tape recorder. 4,542,430, Cl. 360-106.000.
Tomita, Yoshifumi: *See—*
Odaka, Yoshiyuki; Nakazato, Kouichi; and Tomita, Yoshifumi, 4,542,038, Cl. 427-68.000.
Toms, Thomas M., II, to Troxler Electronic Laboratories, Inc. Methods and apparatus for surveying roof moisture content. 4,542,472, Cl. 364-556.000.
Tomy Kogyo Company, Incorporated: *See—*
Ikeda, Masaki, 4,541,813, Cl. 446-429.000.
Katsumata, Fuyuki, 4,541,812, Cl. 446-91.000.
Tonami, Munehiko: *See—*
Takeuchi, Masato; Tobita, Hiroshi; Okabe, Sigeru; Okada, Hideo; and Tonami, Munehiko, 4,542,079, Cl. 429-39.000.
Toray Industries, Inc.: *See—*
Hosoi, Kazuo; and Ozawa, Hitoshi, 4,541,952, Cl. 260-112.00R.
Nishioka, Takeshi; Nakamura, Akira; and Yabe, Kenji, 4,542,164, Cl. 521-135.000.
Toray Silicone Company, Ltd.: *See—*
Ona, Isao; and Ozaki, Masaru, 4,541,936, Cl. 252-8.600.
Toshiba Corporation: *See—*
Nagashima, Masayoshi; Yamane, Hiroshi; Nonoyama, Makoto; and Tashiro, Tsuneo, 4,542,387, Cl. 346-76.0PH.
Yamamoto, Toshio, 4,542,438, Cl. 361-403.000.
Totsu, Katsuyuki, to Hios Inc. Riveting motor tool. 4,541,266, Cl. 72-391.000.
Tottori Sanyo Electric Co., Ltd.: *See—*
Okumura, Ryuichi; Dohi, Hidemi; and Togawa, Shingo, 4,541,748, Cl. 400-470.000.
Toya, Ichizo; and Takahashi, Osamu, to Fuji Photo Film Co., Ltd. Color diffusion transfer element with spacer layer containing pigment and scavenger for oxidized developing agent. 4,542,092, Cl. 430-510.000.
Toyo Communication Equipment Co., Ltd.: *See—*
Nakazawa, Yuzo; Ono, Kazuo; Tanaka, Masaki; Morita, Takao; and Kurosaki, Takefumi, 4,542,356, Cl. 333-195.000.
Toyo Seikan Kaisha, Ltd.: *See—*
Imazu, Katsuhiro; Matsubayashi, Hiroshi; Horiguchi, Makoto; Taira, Kazuo; Kobayashi, Seishichi; and Ueno, Hiroshi, 4,541,546, Cl. 220-456.000.
Toyoda Gosei Co., Ltd.: *See—*
Mabuchi, Akira, 4,542,166, Cl. 521-176.000.
Ono, Satoshi; Sugita, Hiroshi; and Hiramitsu, Tetsushi, 4,541,301, Cl. 74-484.00R.
Toyota Jidosha Kabushiki Kaisha: *See—*
Fukuta, Kinsho; and Kanamaru, Makoto, 4,541,672, Cl. 297-367.000.
Kanaya, Takakuni; Kudo, Isao; and Yokota, Seiji, 4,541,299, Cl. 74-493.000.
Nomura, Yoshihisa; Watanabe, Shingo; and Yamamoto, Shoichi, 4,541,788, Cl. 417-471.000.
Ogino, Shigeru, 4,541,392, Cl. 123-502.000.
Ujihashi, Michiaki; and Saiki, Junichi, 4,541,388, Cl. 123-486.000.
Yamai, Yoshihiro; Hamamoto, Hideo; and Nishibe, Masami, 4,542,448, Cl. 362-268.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Sawabe, Masaki; and Kumagai, Tadanobu, 4,541,817, Cl. 464-111.000.
Yamamoto, Keniti; Suzuki, Tenji; and Sanada, Yukitomo, 4,541,302, Cl. 74-501.00R.
Tozawa, Takashi; Endo, Masahiro; and Eiraku, Yukio, to Mitsubishi Chemical Industries Ltd. Method for reducing the phytotoxicity of agricultural machine oil and a composition useful for the method. 4,541,859, Cl. 71-88.000.
Tozier, John E.; Anouchi, Abraham; and Critchlow, Richard, to Bacharach Instrument Company. Constant temperature catalytic gas detection instrument. 4,541,988, Cl. 422-94.000.
Trammell, Earl M., Jr., to Idea Pioneer, Inc. Fuse puller. 4,541,311, Cl. 81-3.800.
TRE Semiconductor Equipment Corporation: *See—*
Whitney, Theodore R., 4,541,712, Cl. 355-53.000.
Tregonning, Geoffrey R., to Westinghouse Brake and Signal Co. Piston sealing arrangement. 4,541,640, Cl. 277-152.000.
Trepo, Christian, to Institut Merieux. Non-a non-b hepatitis surface antigen useful for the preparation of vaccines and methods of use. 4,542,016, Cl. 424-86.000.
Tritec Industries, Inc.: *See—*
Hauser, Hugo, 4,541,455, Cl. 137-516.270.
Tritten, Paul: *See—*
Batigne, Jean; Deslandes, Claude; Gillot, Jacques; and Tritten, Paul, 4,541,976, Cl. 264-69.000.
Tropeano, Joseph C.; Tropeano, Joseph T.; and Tropeano, Thomas F. Method and apparatus for producing snow at marginal ambient temperatures and eliminating compressed air line freeze-up and oil contamination. 4,541,250, Cl. 62-532.000.
Tropeano, Joseph T.: *See—*
Tropeano, Joseph C.; Tropeano, Joseph T.; and Tropeano, Thomas F., 4,541,250, Cl. 62-532.000.
Tropeano, Thomas F.: *See—*
Tropeano, Joseph C.; Tropeano, Joseph T.; and Tropeano, Thomas F., 4,541,250, Cl. 62-532.000.
Trouillet, Jean: *See—*
Drevet, Michel; and Trouillet, Jean, 4,541,773, Cl. 415-111.000.
Troutman, Ronald R.: *See—*
Ellis, Wayne F.; Griffin, William R.; and Troutman, Ronald R., 4,542,310, Cl. 307-578.000.
Troxler Electronic Laboratories, Inc.: *See—*
Toms, Thomas M., II, 4,542,472, Cl. 364-556.000.
Troy, Michael, to Engineering Resources, Inc. Valve assembly for purging particulates from a steam piping system. 4,541,456, Cl. 137-549.000.
TRW Inc.: *See—*
Brooks, Robert E., 4,541,687, Cl. 350-162.120.
Lumpp, Robert E., 4,541,678, Cl. 339-75.0MP.
Tscherter, Hans: *See—*
Kobel, Hans; Sanglier, Jean-Jacques; Tscherter, Hans; and Bolliger, Georg, 4,542,135, Cl. 514-250.000.
Tsien, Hsue C.: *See—*
Francis, Robert W.; Napoli, Joseph D.; and Tsien, Hsue C., 4,542,258, Cl. 136-256.000.
Tsubakimoto Chain Co.: *See—*
Uemura, Takeshi, 4,541,533, Cl. 211-1.500.
Tsubota, Motohiko: *See—*
Ohki, Nobutaka; Tsubota, Motohiko; Morigaki, Masakazu; and Hamaoka, Tsutomu, 4,542,086, Cl. 430-218.000.
Tsuchiya, Hiraku: *See—*
Onoe, Yoshinori; Takagi, Hiroshi; Ikenaga, Satoru; Tsuchiya, Hiraku; Murakami, Shohei; and Nakao, Masakazu, 4,541,473, Cl. 164-444.000.
Tsuda, Yoshio: *See—*
Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; Inoue, Yoshihisa; Naito, Youichiro; and Suyama, Tadakazu, 4,542,147, Cl. 514-411.000.
Tsugawa, Shunichi: *See—*
Ogata, Hajime; Ohashi, Yoshiharu; Tsugawa, Shunichi; Ichida, Toshio; and Irie, Toshio, 4,542,077, Cl. 428-629.000.
Tsuhako, Mitsutomo: *See—*
Iino, Shinji; Maruyama, Kensaku; Takenaga, Motoi; Muramoto, Kazuhiko; and Tsuhako, Mitsutomo, 4,542,001, Cl. 423-311.000.
Tsukada, Akira: *See—*
Yamaoka, Nobutatsu; Tsukada, Akira; and Sasazawa, Kazuo, 4,541,974, Cl. 264-61.000.
Tsunekawa, Shou, to Tokyo Shibaura Denki Kabushiki Kaisha. Image processing device for continuously extracting features of small regions of an image. 4,542,527, Cl. 382-52.000.
Tsushima, Noriyuki; and Hirose, Toshiharu, to NTN Toyo Bearing Co., Ltd. Method of producing split bearing rings. 4,541,157, Cl. 29-149.50C.
Tu Xuan, Mai, to Omega SA. Energizing method for a single phase timepiece stepping motor. 4,542,329, Cl. 318-696.000.
Tuchiya, Yoshimasa: *See—*
Nishimiya, Ryuji; Tuchiya, Yoshimasa; and Chikaraishi, Takayo, 4,541,201, Cl. 49-221.000.
Tuma, Alan J.: *See—*
Fiala, Peter E.; Davis, Gerald E.; Tuma, Alan J.; and Hart, Jack E., 4,541,595, Cl. 244-129.300.
Turk, Erich: *See—*
Vierkotter, Peter; Turk, Erich; Holdt, Bernd-Dieter; and Menke, Ronald, 4,541,551, Cl. 222-456.000.
Turner, Roy D.: *See—*
Holman, Howard E.; and Turner, Roy D., 4,541,684, Cl. 339-14.00L.
Tusco Manufacturing Co.: *See—*
Everett, Lynn E., 4,541,675, Cl. 312-257.00R.
Twin City Monorail: *See—*
Clemens, Gerald C., 4,541,769, Cl. 414-633.000.
Tyssen, Egon: *See—*
Scholz, Stefan; and Tyssen, Egon, 4,542,299, Cl. 250-504.00R.
Uchikoshi, Gohji, to Nakamichi Corporation. Method of converting a digital signal into an analog signal and a converter therefor. 4,542,371, Cl. 340-347.0DA.
Ueda, Katsuhiko: *See—*
Chabata, Sueji; Nakano, Keiji; Ito, Kichizo; Ueda, Katsuhiko; Iizuka, Hirokazu; Miyako, Hisao; and Fukagawa, Katsumi, 4,542,064, Cl. 428-383.000.
Uemura, Takeshi, to Tsubakimoto Chain Co. Chain for a machining center. 4,541,533, Cl. 211-1.500.
Ueno, Hiroshi: *See—*
Imazu, Katsuhiro; Matsubayashi, Hiroshi; Horiguchi, Makoto; Taira, Kazuo; Kobayashi, Seishichi; and Ueno, Hiroshi, 4,541,546, Cl. 220-456.000.

Ueno, Katsuji; Sugimoto, Hiroaki; and Hayatsu, Kazuo, to Sumitomo Chemical Company, Limited. Method for producing branched aromatic polyesters. 4,542,203, Cl. 528-126.000.
Ueno, Yutaka: *See*—
Imanaka, Yoshifumi; and Ueno, Yutaka, 4,542,411, Cl. 358-260.000.
Uetani, Kenichi, to Mitsubishi Denki Kabushiki Kaisha. Group supervisory control system for elevator. 4,542,463, Cl. 364-424.000.
Uetsuhara, Tokio, to Mitsubishi Mining & Cement Co., Ltd. Electronic valve control apparatus. 4,541,563, Cl. 239-64.000.
Ujihashi, Michiaki; and Saiki, Junichi, to Toyota Jidosha Kabushiki Kaisha. Fuel injection timing control unit for an electronic controlled fuel injection apparatus mounted on an internal combustion engine. 4,541,388, Cl. 123-486.000.
Umemoto, Mitsumasa; Asano, Tamotsu; Nagata, Teruyuki; and Numata, Satoshi, to Mitsui Toatsu Chemicals, Inc. Process for producing 3-phenoxybenzyl 2-(4-alkoxyphenyl)-2-methylpropyl ethers. 4,542,243, Cl. 568-636.000.
Union Carbide Corporation: *See*—
Anderson, John E., 4,541,796, Cl. 431-187.000.
Derderian, Edmond J., 4,541,836, Cl. 44-53.000.
Evans, William P., 4,541,172, Cl. 29-623.100.
Godlewski, Robert E., 4,542,174, Cl. 523-508.000.
Miller, Raymond H.; and VanKempema, Richard B., 4,541,798, Cl. 431-266.000.
Nausedas, Joseph A., 4,541,226, Cl. 53-459.000.
Union Oil Company of California: *See*—
Marsh, Glenn A.; and Buhl, Robert F., 4,541,278, Cl. 73-592.000.
Miller, Alex E., 4,542,032, Cl. 426-319.000.
Unique Technologies, Inc.: *See*—
Cardarelli, Nathan F.; and Kanakkanatt, Sebastian V., 4,541,956, Cl. 260-397.100.
United Abrasives, Inc.: *See*—
Patrello, Joseph, 4,541,205, Cl. 51-168.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See*—
Gray, George W.; Lacey, David; Pellatt, Martin G.; and Sturgeon, Bennett, 4,542,230, Cl. 560-01.000.
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Agriculture: *See*—
Graham, Clarence O., Jr.; Shepard, Charles L.; Ruppenicker, George F., Jr.; and Kullman, Russell M. H., 4,541,231, Cl. 57-12.000.
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Ballato, Arthur, 4,542,355, Cl. 333-191.000.
Gutleber, Frank S., 4,542,515, Cl. 375-17.000.
Schmidt, Jimmy Q.; and Loder, Rurik K., 4,542,342, Cl. 324-207.000.
Shreve, James S., 4,542,367, Cl. 340-347.0DA.
Stern, Richard A.; and Babbitt, Richard W., 4,542,357, Cl. 333-24.200.
White, Harold V., 4,541,178, Cl. 33-180.00R.
Energy: *See*—
Christiansen, David W.; and Brown, William F., 4,542,267, Cl. 219-9.500.
McNeilly, David R., 4,542,346, Cl. 328-165.000.
Roper, John R., 4,541,287, Cl. 73-827.000.
Susman, Sherman; Boehm, Leah; Volin, Kenneth J.; and Delbacq, Charles J., 4,542,108, Cl. 501-40.000.
Tan, Tai Ho; and Williams, Arthur H., 4,542,290, Cl. 250-213.0VT.
General Counsel-Code GP: *See*—
Nelson, Charles W., 4,542,520, Cl. 378-58.000.
Navy: *See*—
Adams, James D., 4,541,778, Cl. 416-193.00A.
Chadwick, William R.; and Rose, Conrad M., 4,541,591, Cl. 244-3.150.
Fowler, Steven E.; Hennings, George N.; and McVay, James V., 4,541,341, Cl. 102-215.000.
Nelson, Floyd E., 4,542,334, Cl. 324-61.00R.
U.S. Philips Corporation: *See*—
Bates, Robert N.; and Ballard, Philip M., 4,542,535, Cl. 455-327.000.
Churchill, John E.; and Stockdale, Trevor J., 4,541,291, Cl. 73-864.250.
de Niet, Edmond, 4,542,425, Cl. 360-77.000.
Mulder, Berend J.; and van Heusden, Sybrandus, 4,541,811, Cl. 445-26.000.
Schomberg, Hermann, 4,541,279, Cl. 73-597.000.
Van Den Beemt, Johannes A. C., 4,542,512, Cl. 322-46.000.
van de Plassche, Rudy J., 4,542,332, Cl. 323-317.000.
United Technologies Corporation: *See*—
Hovan, Edward J., 4,541,775, Cl. 415-180.000.
Perretta, Frederick A., 4,542,441, Cl. 361-412.000.
University of Bath, The: *See*—
Black, Joseph; Foster, Mark A.; and Luard, Nicholas G., 4,541,134, Cl. 5-118.000.
University of Delaware: *See*—
Wiedeman, Scott, 4,542,256, Cl. 136-249.000.
University of Oklahoma, Board of Regents for the: *See*—
Purcupile, John C., 4,541,274, Cl. 73-151.000.
Uno, Motoo: *See*—
Takasago, Masahiro; Maeda, Takeshi; Uno, Motoo; and Mizoguchi, Yasumitsu, 4,542,491, Cl. 369-45.000.
UOP Inc.: *See*—
Lomas, David A.; and Hammershaimb, Harold U., 4,541,922, Cl. 208-164.000.
Lomas, David A.; and Hammershaimb, Harold U., 4,541,923, Cl. 208-164.000.
Upjohn Company, The: *See*—
Gammill, Ronald B., 4,542,228, Cl. 549-387.000.
McClellan, Thomas R.; and Murray, Pat L., 4,542,041, Cl. 427-212.000.
White, David R.; and Maring, Clarence J., 4,542,227, Cl. 549-361.000.
Upmeier, Hartmut, to Windmoller & Holscher. Process and apparatus for forming and rearranging partial streams of molten materials processed in an extruder for making thermoplastic and/or elastomeric products. 4,541,982, Cl. 264-349.000.
Urquhart, Donald B.; and Moore, Stephen A., to Coal Industry (Patents) Limited. Process for hydrocracking supercritical gas extracts of carbonaceous material. 4,541,913, Cl. 208-8.0LE.
USM Corporation: *See*—
Bryce, William D., Jr., 4,541,761, Cl. 411-34.000.
Potzas, Peter, 4,541,602, Cl. 248-544.000.
Schaty, Harold, 4,541,153, Cl. 24-305.000.
USV Pharmaceutical Corp.: *See*—
Reilly, Laurence W., Jr.; and Barton, Jeffrey N., 4,542,234, Cl. 560-38.000.
Utsch, Berthold: *See*—
Corbach, Rainer; Utsch, Berthold; Mohr, Adolf; and Zimmermann, Kurt, 4,542,314, Cl. 310-154.000.
Uyeda, Tim M., to La Gard, Inc. Combination lock. 4,541,259, Cl. 70-316.000.
Valdemarsson, Stefan, to ASEA Aktiebolag. Temperature-compensated magnetoelastic force measuring means. 4,541,289, Cl. 73-862.690.
Vallourec S.A.: *See*—
Peytavin, Pierre, 4,541,262, Cl. 72-214.000.
Vandecasteele, Jean-Paul; Ballerini, Daniel; Lemal, Jeanine; and Le Penru, Yann, to Institut Francais du Petrole. Production of glucose dehydrogenase and use of the resultant enzyme in the enzymatic synthesis of L-carnitine. 4,542,098, Cl. 435-190.000.
Van Den Beemt, Johannes A. C., to U.S. Philips Corporation. Semiconductor laser having a metal-filled groove for improved cooling and stability. 4,542,512, Cl. 322-46.000.
van den Berg, Arie P., to Mantra Tube Ltd. Device for welding tubes. 4,542,276, Cl. 219-60.00A.
van den Berg, Gerrit H.: *See*—
Smakman, Robert; and van den Berg, Gerrit H., 4,542,015, Cl. 424-79.000.
van de Plassche, Rudy J., to U.S. Philips Corporation. Precision current-source arrangement. 4,542,332, Cl. 323-317.000.
van der Heijden, Lambertus P. P. M., to Dow Chemical Company, The. Polymeric films having one-sided cling and compositions useful in their preparation. 4,542,188, Cl. 525-240.000.
van der Lely, Cornelis. Plow. 4,541,491, Cl. 172-33.000.
Vanderminden, Robert D. Sand chair. 4,541,666, Cl. 297-16.000.
van der Scheer, Derk, to Hazemeijer B.V. End cap for an electric high voltage fuse. 4,542,364, Cl. 337-253.000.
Van Domelen, Joseph D., to Tektronix, Inc. Device for mounting an electrical connector to a conductive panel. 4,541,683, Cl. 339-126.00R.
Vandoni, Guido, to Edmond Pharma s.r.l. Compound having vasodilating, antiaggregating and hypocholesterolemic activities, process for the preparation thereof and pharmaceutical compositions therefrom. 4,542,141, Cl. 514-341.000.
van Elsen, Johannes J. M. Device for applying symbols to protein-containing material. 4,542,274, Cl. 219-10.810.
Van Gestel, Josef; Duytschaever, Benedikt; Muntwyler, Rene ; and Scharer, Max, to Janssen Pharmaceutica N.V. Process for the protection of wood and coatings against deterioration by microorganisms. 4,542,146, Cl. 514-383.000.
Van Heukelom, Rowland M.: *See*—
Deimerly, Thomas R.; and Van Heukelom, Rowland M., 4,541,565, Cl. 239-178.000.
van Heusden, Sybrandus: *See*—
Mulder, Berend J.; and van Heusden, Sybrandus, 4,541,811, Cl. 445-26.000.
Van Humbeeck, Freddy J.; Burtin, Jean; and Van Meenen, Johnny P., to AGFA-Gevaert N.V. Machine for cutting documents. 4,541,317, Cl. 83-34.000.
VanKempema, Richard B.: *See*—
Miller, Raymond H.; and VanKempema, Richard B., 4,541,798, Cl. 431-266.000.
Van Loveren, Augustinus G.; Hanna, Marie R.; Luccarelli, Domenick, Jr.; Bowen, David R.; Vock, Manfred H.; and Wiegers, Wilhelmus J., to International Flavors & Fragrances Inc. Use of macrocyclic lactone in augmenting or enhancing aroma or taste of consumable materials. 4,541,950, Cl. 252-522.00R.
Van Meenen, Johnny P.: *See*—
Van Humbeeck, Freddy J.; Burtin, Jean; and Van Meenen, Johnny P., 4,541,317, Cl. 83-34.000.
van Mullekom, Hubert P., to Ruti-Te Strake B.V. Shuttleless weaving machine. 4,541,460, Cl. 139-429.000.
Varian Associates, Inc.: *See*—
Holden, Scott C., 4,542,298, Cl. 250-443.100.
Varrese, Francis R.: *See*—
Auerweck, Ferdinand J.; Bulgarelli, Donald J.; Roller, Curtis A.; and Varrese, Francis R., 4,541,282, Cl. 73-715.000.
Varrial, Ralph W. Golf club head cleaning machine. 4,541,138, Cl. 15-21.00D.

VDO Alolf Schindling AG: *See—*
Ruschek, Gerhard; Wietschorke, Stephan; and Sausner, Andreas, 4,541,379, Cl. 123-339.000.

Venable, Glen J.: *See—*
O'Dea, James D.; and Venable, Glen J., 4,541,827, Cl. 493-309.000.

Venning, Scott; and Christian, Anthony. Exhaust diffusion apparatus. 4,541,506, Cl. 181-254.000.

Verfaillie, Guido A. M.; and Breynaert, Dirk, to International Standard Electric Corporation. Demodulator circuit with integrated automatic gain control. 4,542,347, Cl. 329-124.000.

Vesperman, William C.; and Wilson, Max K. Insulating cover for pull down stairs. 4,541,208, Cl. 52-19.000.

Vesperman, William C.: *See—*
Kiersarsky, Albert S.; Sauer, Earl S.; Vesperman, William C.; and Wilson, Max K., 4,541,980, Cl. 264-174.000.

Victor Company of Japan: *See—*
Kotake, Eiichi; Enami, Ken; and Wada, Kinzo, 4,542,423, Cl. 360-73.000.

Victor Company of Japan, Ltd.: *See—*
Hara, Mitsuhiko, 4,541,581, Cl. 242-198.000.
Kasuga, Masao, 4,542,369, Cl. 340-347.0DA.
Namiki, Yasuomi, 4,542,422, Cl. 360-67.000.
Ohta, Yoshihiko, 4,542,417, Cl. 360-9.100.
Takehara, Hideaki, 4,542,493, Cl. 369-126.000.

Vieglins, Dzintars, to Skillmech AB. Bracket or support, particularly for shelf frameworks. 4,541,600, Cl. 248-239.000.

Vierkotter, Peter; Turk, Erich; Holdt, Bernd-Dieter; and Menke, Ronald, to Henkel Kommanditgesellschaft auf Aktien. Sealing top for containers for powdered or granular materials. 4,541,551, Cl. 222-456.000.

Villa, Carlo, to Textilma AG. Ribbon loom. 4,541,461, Cl. 139-442.000.

Villa, Giovanni: *See—*
Piccolo, Oreste; Belli, Aldo; Villa, Giovanni; Zen, Enrico; and Citterio, Attilio, 4,542,233, Cl. 560-21.000.

Villanueva, Jesus R.; and Krautsack, Richard G., to Cooperative Marketing Co., The. Hanger for mounting items. 4,541,598, Cl. 248-221.400.

Villetto, Robert T., Jr.: *See—*
Galie, John R.; Goth, George R.; Hansen, Thomas A.; and Villetto, Robert T., Jr., 4,541,168, Cl. 29-579.000.

Viningauz, Arthur: *See—*
Chang, Tiang-Shing; Zientek, Lucy J.; and Viningauz, Arthur, 4,542,168, Cl. 523-118.000.

Viricel, Andree: *See—*
Lacroix, Guy; Anding, Claude; and Viricel, Andree, 4,542,023, Cl. 514-126.000.

Visky nee Gombos, Zsuzsanna: *See—*
Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nyitrai , Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Visky nee Gombos, Zsuzsanna; and Barta nee Szalai, Gizella, 4,541,955, Cl. 260-330.900.

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Vock, Manfred H.: *See—*
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Block, Jacob, 4,541,485, Cl. 166-281.000.
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Weichert, Rudolf: *See—*
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Martin, Harry F., 4,541,247, Cl. 60-660.000.
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White, David R.; and Maring, Clarence J., to Upjohn Company, The. Processes for the preparation of spectinomycin analogs, novel products and intermediates therein. 4,542,227, Cl. 549-361.000.

White, Harold V., to United States of America, Army. Alignment transfer and verification scheme for a portable land navigation system. 4,541,178, Cl. 33-180.00R.

White, Kenneth B.; and Largent, William J., to Akzona Incorporated. Method for the manufacture of polyisocyanurate foams. 4,542,163, Cl. 521-105.000.

White, William W., to James Howden & Company Limited. Scoop for picking up lubricant. 4,541,737, Cl. 384-406.000.

Whitehead, Lorne A., to Canadian Patents & Development Limited. Lighting panel with opposed 45° corrugations. 4,542,449, Cl. 362-330.000.

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Wilkinson, Richard A., Jr.; Hunt, William C.; and Rickert, David W., to Storage Technology Partners II. Flexible hub for removable disk. 4,542,426, Cl. 360-97.000.

Will, Neal; and Thurston, Larry R. Disposable bonnet raincoat. 4,541,128, Cl. 2-84.000.

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Williams, Bolie C., III, to Cameron Iron Works, Inc. Ram-type blowout preventer with improved ram front packer. 4,541,639, Cl. 277-73.000.

Williams, Leonard E., Jr., to Cameron Iron Works, Inc. Ram-type blowout preventer. 4,541,606, Cl. 251-1.300.

Williams, Richard L., to Miller Special Tools, Division of Triangle Corporation. Electronic control circuit systems analyzer. 4,542,335, Cl. 324-66.000.

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Wilson, William A. Side kick solids separator. 4,541,532, Cl. 209-651.000.

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Yamamoto, Takashi; and Kitajima, Houdo, to Murata Manufacturing Co., Ltd. Chip-shaped piezoelectric vibrator mount. 4,542,315, Cl. 310-348.000.
Yamamoto, Takushi: *See—*
Obayashi, Shigeji; Nakamura, Morio; Yamamoto, Takushi; and Fujikake, Masato, 4,541,871, Cl. 106-197.200.
Yamamoto, Toshio, to Toshiba Corporation. Hybrid integrated circuit device. 4,542,438, Cl. 361-403.000.
Yamane, Hiroshi: *See—*
Nagashima, Masayoshi; Yamane, Hiroshi; Nonoyama, Makoto; and Tashiro, Tsuneo, 4,542,387, Cl. 346-76.0PH.
Yamaoka, Nobutatsu; Tsukada, Akira; and Sasazawa, Kazuo, to Taiyo Yuden Co., Ltd. Semiconductive ceramic compositions with a non-linear volt-ampere characteristic, and process for preparing coherent bodies of such compositions. 4,541,974, Cl. 264-61.000.
Yamasa Shoyu Kabushiki Kaisha: *See—*
Kodama, Kenjiro; Kuninaka, Akira; and Saneyoshi, Mineo, 4,542,021, Cl. 514-49.000.
Sakata, Shinji; and Machida, Haruhiko, 4,542,210, Cl. 536-29.000.
Yamashita, Katsumi: *See—*
Sato, Mitomu; Nakatani, Toshikazu; Yamashita, Katsumi; and Ogata, Terumi, 4,541,145, Cl. 24-19.000.
Yamashita, Masamichi: *See—*
Fenn, John B.; Yamashita, Masamichi; and Whitehouse, Craig, 4,542,293, Cl. 250-288.000.
Yamazaki, Shunpei, to SemiConductor Energy Laboratory Co. Method of making semiconductor deivce using a conductive layer as mask. 4,541,166, Cl. 29-571.000.
Yanadori, Michio; and Kawabata, Toshiaki, to Hitachi, Ltd. Method of producing heat pipe. 4,541,261, Cl. 72-112.000.
Yanagi, Masahiro, to Matsushita Electric Industrial Co., Ltd. Disk for measuring off-track quantity of magnetic head, and measuring apparatus using the disk. 4,542,428, Cl. 360-75.000.
Yanagi, Mitsuo: *See—*
Yatsuo, Tsutomu; Naito, Masayoshi; Nagano, Takahiro; Yasuda, Tomio; Onuki, Jin; Yanagi, Mitsuo; and Sato, Fumio, 4,542,398, Cl. 357-38.000.
Yanai, Tokiyoshi; Yamaguchi, Hirotsugu; Fukino, Masato; and Aoyama, Yutaka, to Nissan Motor Company, Ltd. Vehicular power steering having steering effort control system. 4,541,499, Cl. 180-142.000.
Yasuda, Kenji: *See—*
Itamoto, Shigeru; Yasuda, Kenji; and Mikami, Senji, 4,541,717, Cl. 356-244.000.
Yasuda, Tomio: *See—*
Yatsuo, Tsutomu; Naito, Masayoshi; Nagano, Takahiro; Yasuda, Tomio; Onuki, Jin; Yanagi, Mitsuo; and Sato, Fumio, 4,542,398, Cl. 357-38.000.
Yatsuo, Tsutomu; Naito, Masayoshi; Nagano, Takahiro; Yasuda, Tomio; Onuki, Jin; Yanagi, Mitsuo; and Sato, Fumio, to Hitachi, Ltd. Semiconductor devices of multi-emitter type. 4,542,398, Cl. 357-38.000.
Yester, Francis R., Jr.; Gailus, Paul H.; and Louis, Edward V., to Motorola, Inc. Cavity oscillator with undesired mode absorbing waveguides for linear FM. 4,542,352, Cl. 331-96.000.
Yetter, Arthur M., Jr. Head and torso restraint. 4,541,425, Cl. 128-134.000.
Yohner, Paul A., to Keystone International, Inc. Rotatable shaft assembly. 4,541,612, Cl. 251-308.000.
Yokogawa Hokushin Electric Corporation: *See—*
Fukai, Yoshio; Yamamoto, Masato; and Hanawaka, Masuo, 4,542,452, Cl. 364-141.000.
Yokota, Seiji: *See—*
Kanaya, Takakuni; Kudo, Isao; and Yokota, Seiji, 4,541,299, Cl. 74-493.000.
Yokotani, Yoichirou: *See—*
Kato, Junichi; Yokotani, Yoichirou; Nishida, Masamitsu; and Ouchi, Hiromu, 4,542,107, Cl. 501-134.000.
Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; Inoue, Yoshihisa; Naito, Youichiro; and Suyama, Tadakazu, to Green Cross Corporation, The. Perfluoro-1-azatricyclic amine compound. 4,542,147, Cl. 514-411.000.
Yokoyama, Shotaro; and Nishibe, Takashi, to Fuji Electric Company Ltd. Automatic focusing apparatus including image contrast detection means. 4,542,289, Cl. 250-201.000.
Yoneyama, Shigeyuki; Nakano, Kenji; Moriwaki, Hisayoshi; and Takahashi, Takao, to Sony Corporation. Method and apparatus for

reproducing an information signal comprised of a video signal and audio signal. 4,542,418, Cl. 360-19.100.

Yonezawa, Toshio: *See*—
Hiraki, Shunichi; Kumamaru, Kuniaki; Koshino, Yutaka; and Yonezawa, Toshio, 4,542,400, Cl. 357-54.000.

Yong, Sam: *See*—
Huang, Victor T.; Colson, Cynthia A.; Yong, Sam; and Clemmings, John F., 4,542,035, Cl. 426-565.000.

Yoshida Kogyo K. K.: *See*—
Boser, Ronald J.; and Martin, Michael T., 4,541,352, Cl. 112-265.200.

Yoshida Kogyo K.K.: *See*—
Ito, Masahiko; and Ogihara, Toru, 4,541,154, Cl. 24-442.000.

Yoshida, Seiichi; and Takeuchi, Shigekazu, to Kuraflex Co., Ltd. Non-woven fabric and process for producing thereof. 4,542,060, Cl. 428-287.000.

Yoshida, Shiro: *See*—
Kageyama, Minoru; Hirose, Takeo; Matsui, Tadao; Ogino, Hiroshi; Yoshida, Shiro; and Suzuki, Takayuki, 4,541,371, Cl. 123-65.0PE.

Yoshida, Tomohisa: *See*—
Sasage, Tsutomu; Yoshida, Tomohisa; and Yoshida, Toshio, 4,541,624, Cl. 271-12.000.

Yoshida, Toshio: *See*—
Sasage, Tsutomu; Yoshida, Tomohisa; and Yoshida, Toshio, 4,541,624, Cl. 271-12.000.

Yoshihara, Junji: *See*—
Niwa, Toshio; Himeno, Kiyoshi; and Yoshihara, Junji, 4,542,207, Cl. 534-630.000.

Yoshihara, Takahisa: *See*—
Kyono, Kazuaki; Kurokawa, Shigeo; Kimura, Hajime; Irie, Toshio; Yoshihara, Takahisa; and Matsuda, Akira, 4,541,903, Cl. 204-28.000.

Yoshimoto, Masahiko: *See*—
Anami, Kenji; Yoshimoto, Masahiko; Shinohara, Hirofumi; and Tomisawa, Osamu, 4,542,486, Cl. 365-230.000.

Yoshinaga, Kenji, to Canon Kabushiki Kaisha. Recording apparatus having parting agent removing means. 4,541,707, Cl. 355-3.0FU.

Yoshinori, Ashida: *See*—
Tetsuya, Iwao; Reiji, Hirai; and Yoshinori, Ashida, 4,542,005, Cl. 423-347.000.

Yoshioka, Yoshio: *See*—
Hozumi, Motoo; Nomura, Hiroaki; and Yoshioka, Yoshio, 4,542,219, Cl. 546-22.000.

Yost, Michael G.: *See*—
Gehlke, Scott J. S.; Yost, Michael G.; and Steinman, Arnold J., 4,542,434, Cl. 361-231.000.

Young, Colin G., to Emco Wheaton (International) Limited. Gaseous fuel carburetion system. 4,541,397, Cl. 123-527.000.

Young, Donald J.: *See*—
Morris, Ernest E.; and Young, Donald J., 4,541,191, Cl. 42-1.00A.

Young, Steven D., to Merck & Co., Inc. Dioxobenzocyclo-hepta-pyridine compounds, process and use as antihypertensives. 4,542,138, Cl. 514-290.000.

Yuguchi, Naoki; and Kawasaki, Keiichi, to Canon Kabushiki Kaisha. Sheet film supply apparatus. 4,541,625, Cl. 271-42.000.

Zachman, James R.: *See*—
Salerni, John V.; and Zachman, James R., 4,541,484, Cl. 166-278.000.

Zahedi, Karim: *See*—
Alexander, Jeffery C.; and Zahedi, Karim, 4,542,000, Cl. 423-244.000.

Zahn, Heinrich: *See*—
Fell, Wolfgang; Zahn, Heinrich; Gunschmann, Peter; and Buchel, Winfried, 4,541,557, Cl. 226-191.000.

Zakic, Paul, to NRM Corporation. Dual loop temperature control system for rubber and other extruders with optional connection for heat pump. 4,541,792, Cl. 425-143.000.

Zappen, Hans W.: *See*—
Zimmermann, Friedrich; Zettl, Herbert; Zappen, Hans W.; and Sacher, Christian, 4,542,403, Cl. 358-41.000.

Zauer, Karoly: *See*—
Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nyitrai , Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Visky nee Gombos, Zsuzsanna; and Barta nee Szalai, Gizella, 4,541,955, Cl. 260-330.900.

Zaweski, Edward F.; and Niebylski, Leonard M., to Ethyl Corporation. Fuel compositions. 4,541,838, Cl. 44-57.000.

Zeller Corporation, The: *See*—
Mazziotti, Philip J., 4,541,819, Cl. 464-144.000.

Zemanek, Joseph, Jr.: *See*—
Clishem, James A.; Dennis, Charles L.; and Zemanek, Joseph, Jr., 4,542,488, Cl. 367-35.000.

Zen, Enrico: *See*—
Piccolo, Oreste; Belli, Aldo; Villa, Giovanni; Zen, Enrico; and Citterio, Attilio, 4,542,233, Cl. 560-21.000.

Zerres, Erwin: *See*—
Hibbel, Josef; Gerhardus, Ulrich; Schmidt, Volkmar; Lieder, Bernhard; Scheve, Heinrich; and Zerres, Erwin, 4,541,840, Cl. 48-63.000.

Zettl, Herbert: *See*—
Zimmermann, Friedrich; Zettl, Herbert; Zappen, Hans W.; and Sacher, Christian, 4,542,403, Cl. 358-41.000.

Ziegler, William R. A.; and MacAnally, Richard B., to Storage Technology Partners II. Hermetically sealed disk cartridge with adjustable optical window. 4,542,495, Cl. 369-273.000.

Ziegler, Wolfgang: *See*—
Knoll, Peter; Rapps, Peter; and Ziegler, Wolfgang, 4,541,693, Cl. 350-339.00F.

Zientek, Lucy J.: *See*—
Chang, Tiang-Shing; Zientek, Lucy J.; and Viningauz, Arthur, 4,542,168, Cl. 523-118.000.

Zimmerman, Bonnie L.; Gannaway, Thomas W.; Resinski, Lawrence J.; and DeVita, Philip S., to Jewish Employment and Vocational Service. Multiple aptitude testing device. 4,541,806, Cl. 434-258.000.

Zimmerman, Thomas G., to VPL Research Inc. Optical flex sensor. 4,542,291, Cl. 250-231.00R.

Zimmermann, Friedrich; Zettl, Herbert; Zappen, Hans W.; and Sacher, Christian. Method of confining the signal level range of a television camera. 4,542,403, Cl. 358-41.000.

Zimmermann, Kurt: *See*—
Corbach, Rainer; Utsch, Berthold; Mohr, Adolf; and Zimmermann, Kurt, 4,542,314, Cl. 310-154.000.

Zimmermann, Wolfgang; and Harreus, Albrecht, to Hoechst Aktiengesellschaft. Plasticizer-containing polyvinyl alcohol granules. 4,542,178, Cl. 524-388.000.

Zoll, Karl: *See*—
Jerge, Charles R.; Frankel, Bruce; and Zoll, Karl, 4,541,992, Cl. 422-300.000.

Zoueki, Georges. Apparatus for drilling, engraving and carving ophthalmic lenses. 4,541,760, Cl. 409-137.000.

Zukausky, Keith E., to Eaton Corporation. Mixing valve. 4,541,562, Cl. 236-12.120.

Zumwalt, Floyd A. Piston and connecting rod removing and installation tool. 4,541,158, Cl. 29-278.000.

Zytowski, Peter: *See*—
Gerke, Dieter; Muller, Manfred; Zytowski, Peter; and Radelow, Wolfgang, 4,541,682, Cl. 339-111.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 17TH DAY OF SEPTEMBER, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Alexander, Warren R.: *See—*
Hartung, Russell M.; Appleman, Larry; and Alexander, Warren R., Re. 31,987, Cl. 362-20.000.

Appleman, Larry: *See—*
Hartung, Russell M.; Appleman, Larry; and Alexander, Warren R., Re. 31,987, Cl. 362-20.000.

BASF Aktiengesellschaft: *See—*
Lotsch, Wolfgang, Re. 31,986, Cl. 544-296.000.

Builders Concrete, Inc.: *See—*
Sluys, Wesley W., Re. 31,984, Cl. 114-267.000.

Dai Nippon Toryo Co, Ltd.: *See—*
Hayashi, Masaaki; Sasaki, Hiroharu; and Tsuneta, Kazuyoshi, Re. 31,985, Cl. 523-501.000.

General Signal Corporation: *See—*
Hartung, Russell M.; Appleman, Larry; and Alexander, Warren R., Re. 31,987, Cl. 362-20.000.

Hartung, Russell M.; Appleman, Larry; and Alexander, Warren R., to General Signal Corporation. Automatic lamp bulb changer for signal lamps. Re. 31,987, Cl. 362-20.000.

Hayashi, Masaaki; Sasaki, Hiroharu; and Tsuneta, Kazuyoshi, to Dai Nippon Toryo Co, Ltd. Aqueous dispersion type thermosetting coating composition. Re. 31,985, Cl. 523-501.000.

Lotsch, Wolfgang, to BASF Aktiengesellschaft. Manufacture of organic pigments. Re. 31,986, Cl. 544-296.000.

Sasaki, Hiroharu: *See—*
Hayashi, Masaaki; Sasaki, Hiroharu; and Tsuneta, Kazuyoshi, Re. 31,985, Cl. 523-501.000.

Sluys, Wesley W., to Builders Concrete, Inc. Concrete marine float and method of fabricating. Re. 31,984, Cl. 114-267.000.

Tsuneta, Kazuyoshi: *See—*
Hayashi, Masaaki; Sasaki, Hiroharu; and Tsuneta, Kazuyoshi, Re. 31,985, Cl. 523-501.000.

LIST OF DESIGN PATENTEES

AE Development Corporation: *See—*
Bennett, Robert A., 280,667, Cl. D28-7.000.

Agard, Judith A.: *See—*
Swan, Ralph M.; Sherman, Benjamin; and Agard, Judith A., 280,624, Cl. D14-109.000.

Albon, Lionel F. S.; and Winterson, Anthony J., to Internationale Octrooi Maatschappij "Octropa" B.V. Tray for carrying out chemical and biological tests. 280,663, 9-17-85, Cl. D24-31.000.

Altadonna, James. Container for toothpaste and toothbrushes. 280,581, 9-17-85, Cl. D6-528.000.

Ampex Corporation: *See—*
Wilson, George A., 280,616, Cl. D14-8.000.

Andrews, Stuart R. Novelty club. 280,654, 9-17-85, Cl. D21-211.000.

Appel, Mel; and Kress, George, to Appel, Mel. Child's table. 280,580, 9-17-85, Cl. D6-486.000.

Arthun, Nils I.; and Lofgren, Peter J., to Steridose Systems AB. Combined pipe fitting and sprinkling nozzle. 280,659, 9-17-85, Cl. D23-34.000.

Bartfay, Stephen A.; and Buczynski, Raymond J. Tissue embedder. 280,662, 9-17-85, Cl. D24-8.000.

Barton, Robert. Inclement weather hood for a stretcher of litter or the like. 280,573, 9-17-85, Cl. D3-5.000.

Bassett, Howard D., to Union Carbide Corporation. Casserole. 280,589, 9-17-85, Cl. D7-360.000.

Bates, Bobby L., to Bates-Johnson & Co., Inc. Control and meter housing for a battery jumper cable system. 280,614, 9-17-85, Cl. D13-10.000.

Bates-Johnson & Co., Inc.: *See—*
Bates, Bobby L., 280,614, Cl. D13-10.000.

Bausch & Lomb Incorporated: *See—*
Zancaner, Trudy H., 280,637, Cl. D16-102.000.
Zancaner, Trudy H., 280,638, Cl. D16-102.000.
Zancaner, Trudy H., 280,639, Cl. D16-102.000.

Bayerische Motoren Werke A.G.: *See—*
Walter, Hubert; and Saaksmeier, Hans-Joachim, 280,609, Cl. D12-182.000.

Beaver, Theodore L.: *See—*
Campbell, G. Edward; and Beaver, Theodore L., 280,602, Cl. D9-376.000.

Beck, Barbara S.: *See—*
Winslow, Robert B., 280,565, Cl. D2-6.000.

Beck, Willi K.; and Roytberg, Leo, to Joseph Pollak Corporation. Toggle switch. 280,615, 9-17-85, Cl. D13-37.000.

Beehive International: *See—*
Marshall, John F., 280,623, Cl. D14-106.000.

Benedict, Charles E., to Telescoping Tie Racks, Inc. Extendable tie rack housing. 280,575, 9-17-85, Cl. D6-324.000.

Bennett, Robert A., to AE Development Corporation. Dispenser for deodorant or other topical product. 280,667, 9-17-85, Cl. D28-7.000.

Besson, Paul, to Guinard Centrifugation. Centrifugation machine for separating, drying or the like. 280,628, 9-17-85, Cl. D15-147.000.

Biesecker, Frederick N., to Drug Plastics & Glass Company, Inc. Bottle or the like. 280,601, 9-17-85, Cl. D9-372.000.

Boberg, Sven-Erik. Mobile. 280,608, 9-17-85, Cl. D11-141.000.

Bridgestone Tire Company Limited: *See—*
Tansei, Hikaru, 280,612, Cl. D12-146.000.

Brown, Jerry A. Towel rack. 280,579, 9-17-85, Cl. D6-410.000.

Brown, Michael; Read, Clifford D.; and Ellis, Warren K., to Northern Telecom Limited. Housing for a wall-mount telephone set base. 280,618, 9-17-85, Cl. D14-61.000.

Brown, Michael; Read, Clifford D.; and Ellis, Warren K., to Northern Telecom Limited. Housing for a telephone handset. 280,619, 9-17-85, Cl. D14-63.000.

Brunswick Corporation: *See—*
Hatch, Edwin B., 280,657, Cl. D22-25.000.

Buczynski, Raymond J.: *See—*
Bartfay, Stephen A.; and Buczynski, Raymond J., 280,662, Cl. D24-8.000.

Campbell, G. Edward; and Beaver, Theodore L., to Chlorox Company, The. Bottle. 280,602, 9-17-85, Cl. D9-376.000.

Canon Kabushiki Kaisha: *See—*
Kadota, Toshihiko, 280,630, Cl. D16-30.000.

Carlson, Casey, to Chicago Cutlery Consumer Products, Inc. Knife block. 280,587, 9-17-85, Cl. D7-74.000.

Cellini, Vito. Combined recoil reducer and flame suppressor for firearms. 280,655, 9-17-85, Cl. D22-7.000.

Certech, Inc.: *See—*
Uram, Stuart Z.; and Fischman, Jerome, 280,627, Cl. D15-135.000.

Chen, Ruey Z. Drill press. 280,626, 9-17-85, Cl. D15-132.000.

Chicago Cutlery Consumer Products, Inc.: *See—*
Carlson, Casey, 280,587, Cl. D7-74.000.

Chlorox Company, The: *See—*
Campbell, G. Edward; and Beaver, Theodore L., 280,602, Cl. D9-376.000.

Colgate-Palmolive Company: *See—*
Johnson, Anthony W.; and Lea, David, 280,603, Cl. D9-389.000.
Johnson, Anthony W.; and Lea, David, 280,604, Cl. D9-389.000.

Dahlgren Engraving Systems, Inc.: *See—*
Neiman, Seth D., 280,642, Cl. D18-13.000.

Dart Container Corporation: *See—*
Earl, John W., 280,600, Cl. D9-352.000.

de Buck, Ronald C. Physical dynamometer. 280,652, 9-17-85, Cl. D21-191.000.

de Buck, Ronald C. Physical dynamometer. 280,653, 9-17-85, Cl. D21-191.000.

DelGarbino, Andrea F.; and DelGarbino, David L. Corner bracket for use in beauty salons, homes and the like. 280,582, 9-17-85, Cl. D6-562.000.

DelGarbino, David L.: *See—*
DelGarbino, Andrea F.; and DelGarbino, David L., 280,582, Cl. D6-562.000.

Denton, Arthur M.; and Mills, Fred M., to Keane Monroe Corporation. Sensor unit. 280,607, 9-17-85, Cl. D10-106.000.

Dow, Glen W. Bottle cap opener. 280,594, 9-17-85, Cl. D8-40.000.

Drag Specialties, Inc.: *See—*
Preisler, James M., 280,610, Cl. D12-193.000.

Drug Plastics & Glass Company, Inc.: *See—*
Biesecker, Frederick N., 280,601, Cl. D9-372.000.

Dube, Brian J. Fire stick for jugglers. 280,651, 9-17-85, Cl. D21-100.000.

Duquaine, Edward J., Jr.; and Painter, David L., to Hy Cite Corporation. Audible signaling device for a cooking utensil. 280,592, 9-17-85, Cl. D7-387.000.

Earl, John W., to Dart Container Corporation. Combined packaging cup and lid therefor. 280,600, 9-17-85, Cl. D9-352.000.

Eber, Gabriel: *See*—
Kennedy, Robert J.; and Eber, Gabriel, 280,606, Cl. D9-449.000.
Eckmann, John A.: *See*—
Toth, Richard J.; and Eckmann, John A., 280,620, Cl. D14-70.000.
Edens, Glenn T.: *See*—
Moggridge, William G.; Paulsen, David C.; Edens, Glenn T.; and Hobson, Stephen R., 280,622, Cl. D14-100.000.
Eldon Industries, Inc.: *See*—
Evenson, Mel, 280,583, Cl. D6-574.000.
Ellis, Warren K.: *See*—
Brown, Michael; Read, Clifford D.; and Ellis, Warren K., 280,618, Cl. D14-61.000.
Brown, Michael; Read, Clifford D.; and Ellis, Warren K., 280,619, Cl. D14-63.000.
Epson Corporation: *See*—
Mori, Masahiko, 280,645, Cl. D18-22.000.
Evenson, Mel, to Eldon Industries, Inc. Shelf. 280,583, 9-17-85, Cl. D6-574.000.
Everhan, Walter. Dinner plate. 280,585, 9-17-85, Cl. D7-30.000.
Fender, C. Leo. Control panel for an electric guitar or the like. 280,640, 9-17-85, Cl. D17-20.000.
Fischman, Jerome: *See*—
Uram, Stuart Z.; and Fischman, Jerome, 280,627, Cl. D15-135.000.
Fortsch, William A., to Thomas & Betts Corporation. Clamping base for cable clamps or the like. 280,597, 9-17-85, Cl. D8-396.000.
Fuji Kogyo Co., Ltd.: *See*—
Ohmura, Ryuichi, 280,656, Cl. D22-24.000.
Goto, Tetsuya; Saito, Yasuhiro; and Umino, Toshio, to Ricoh Company, Ltd. Electrostatic copying machine. 280,629, 9-17-85, Cl. D16-30.000.
Goto, Tetsuya: *See*—
Saito, Yasuhiro; Goto, Tetsuya; and Umino, Toshio, 280,635, Cl. D16-32.000.
Green, Richard D. Twin compartment bottle. 280,599, 9-17-85, Cl. D9-341.000.
Grid Systems Corporation: *See*—
Moggridge, William G.; Paulsen, David C.; Edens, Glenn T.; and Hobson, Stephen R., 280,622, Cl. D14-100.000.
Grung, Geir, to Moss Rosenberg Verft A/S. Ship. 280,613, 9-17-85, Cl. D12-315.000.
Guinard Centrifugation: *See*—
Besson, Paul, 280,628, Cl. D15-147.000.
Hammeke, Kevin F. Carrying container for vehicular maintenance products. 280,669, 9-17-85, Cl. D34-45.000.
Hara, Kunio; and Okuyama, Tooru, to Tokyo Shibaura Denki Kabushiki Kaisha. Sorter attachment for copiers. 280,636, 9-17-85, Cl. D16-32.000.
Harden, James P.; Okcuoglu, Selahattin A.; Robards, Preston O., Jr.; Shakib, Iraj D.; and Souder, Thomas D., to International Business Machines Corporation. Print wheel cartridge. 280,641, 9-17-85, Cl. D18-12.000.
Harnick, Robert, to Metal Stand Company. Cover for a chair base. 280,584, 9-17-85, Cl. D6-610.000.
Hatch, Edwin B., to Brunswick Corporation. Front cover for a fishing reel. 280,657, 9-17-85, Cl. D22-25.000.
Haynes, Charles W. Turn signal lens. 280,666, 9-17-85, Cl. D26-125.000.
Hill, Malcolm L. Blower. 280,661, 9-17-85, Cl. D23-162.000.
Hobson, Stephen R.: *See*—
Moggridge, William G.; Paulsen, David C.; Edens, Glenn T.; and Hobson, Stephen R., 280,622, Cl. D14-100.000.
Holden, Daniel L. Adjustable booster seat. 280,578, 9-17-85, Cl. D6-367.000.
Howard, James T.; and Howard, Mary W. Doorknob privacy sign. 280,646, 9-17-85, Cl. D20-40.000.
Howard, Mary W.: *See*—
Howard, James T.; and Howard, Mary W., 280,646, Cl. D20-40.000.
Hy Cite Corporation: *See*—
Duquaine, Edward J., Jr.; and Painter, David L., 280,592, Cl. D7-387.000.
Ichikawa, Takashi, to Shachihata Industry Co., Ltd. Combined stamp and cap therefor. 280,643, 9-17-85, Cl. D18-15.000.
Ichikawa, Takashi, to Shachihata Industry Co., Ltd. Combined stamp and cap therefor. 280,644, 9-17-85, Cl. D18-15.000.
Imada, Michio; and Toyoguchi, Kyo, to Olympus Optical Company Ltd. Electrophotographic copying machine. 280,634, 9-17-85, Cl. D16-31.000.
Inaba, Hiroshi, to Nippon Tsushin Kogyo Kabushiki Kaisha. Telephone set. 280,617, 9-17-85, Cl. D14-58.000.
International Business Machines Corporation: *See*—
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299 D 4,541,409
362 4,541,410
390 4,541,411
419 4,541,412
422 4,541,413
438 4,541,414
440 4,541,415
450 4,541,416

CLASS 127

46.1 4,541,873

CLASS 128

1 D 4,541,417
24.1 4,541,418
78 4,541,419
79 4,541,420
87 B 4,541,421
92 A 4,541,422
92 E 4,541,423
92 EB 4,541,424
134 4,541,425
156 4,541,426
305 4,541,428
305.3 4,541,427
419 PG 4,541,430
419 PT 4,541,431
421 4,541,432
660 4,541,434
4,541,435
4,541,436
663 4,541,437
664 4,541,438
668 4,541,433
691 4,541,439
785 4,541,440

CLASS 130

27 T 4,541,441

CLASS 132

9 4,541,442
75.6 4,541,443

CLASS 133

4 A 4,541,444

CLASS 134

6 4,541,874

CLASS 135

106 4,541,445

CLASS 136

249 4,542,255
4,542,256
251 4,542,257
256 4,542,258

CLASS 137

2 4,541,446
15 4,541,447
62 4,541,448
72 4,541,449
99 4,541,450
118 4,541,451
209 4,541,452
315 4,541,453
505.41 4,541,454
516.27 4,541,455
549 4,541,456
614.06 4,541,457

CLASS 139

55.1 4,541,458
88 4,541,459
429 4,541,460
442 4,541,461
452 4,541,462

CLASS 141

147 4,541,463
198 4,541,464

CLASS 142

55 4,541,465

CLASS 144

363 4,541,466

CLASS 148

11.5 C 4,541,875
22 4,541,876
101 4,541,877
139 4,541,878

CLASS 152

548 4,541,467

CLASS 156

64 4,541,879
94 4,541,880
99 4,541,881
150 4,541,882
159 4,541,883
166 4,541,884
220 4,541,885
230 4,541,886
345 4,541,890
379.6 4,541,891
431 4,541,887
468 4,541,888
583.5 4,541,889
643 4,541,892
4,541,893

CLASS 160

166 R 4,541,469
177 4,541,468

CLASS 162

138 4,541,894
348 4,541,895
363 4,541,896

CLASS 163

5 4,541,470

CLASS 164

6 4,541,471
46 4,541,474
65 4,541,475
182 4,541,476
302 4,541,477
440 4,541,478
444 4,541,473
504 4,541,472

CLASS 165

45 4,541,479
79 4,541,480

CLASS 166

65.1 4,541,481
117.5 4,541,482
263 4,541,483
278 4,541,484
281 4,541,485
297 4,541,486
4,541,487
307 4,541,488
312 4,541,489
379 4,541,490

CLASS 172

33 4,541,491
41 4,541,492
824 4,541,493

CLASS 174

52 FP 4,542,259
52 PE 4,542,260

CLASS 175

228 4,541,494

CLASS 177

210 FP 4,541,495
211 4,541,496

CLASS 178

18 4,542,261

CLASS 179

2 E 4,542,262
81 B 4,542,263
111 E 4,542,264
170.2 4,542,265

CLASS 180

6.48 4,541,497
9.26 4,541,498
68.4 4,541,645
142 4,541,499
205 4,541,500
215 4,541,501
217 4,541,502
249 4,541,503
268 4,541,504

CLASS 181

179 4,541,505
254 4,541,506

CLASS 182

86 4,541,507
178 4,541,508
179 4,541,509

CLASS 184

6.12 4,541,510

CLASS 187

9 R 4,541,511

CLASS 192

56 R 4,541,512
58 R 4,541,513
70.27 4,541,514
85 AA 4,541,515
85 CA 4,541,516

CLASS 193

4 4,541,517
35 A 4,541,518

CLASS 194

1 N 4,541,519

CLASS 198

372 4,541,520
463.5 4,541,521
465.1 4,541,522
470.1 4,541,524
499 4,541,523
735 4,541,525

CLASS 200

144 B 4,542,266

CLASS 203

19 4,541,897

CLASS 204

1 T 4,541,898
4,541,899
4,541,900
4,541,901
4,541,902
28 4,541,903
38.3 4,541,904
38.7 4,541,905
55 R 4,541,906
67 4,541,907
101 4,541,908
129.2 4,541,909
182.8 4,541,910
253 4,541,911
290 R 4,541,912

CLASS 206

0.82 4,541,528
44.12 4,541,526
45.24 4,541,527
510 4,541,529

CLASS 208

8 LE 4,541,913
4,541,916
10 4,541,914
31 4,541,917
65 4,541,915
87 4,541,918
111 4,541,919
138 4,541,920
164 4,541,921
4,541,922
4,541,923
216 R 4,541,924
4,541,925

CLASS 209

571 4,541,530
651 4,541,532
664 4,541,531

CLASS 210

87 4,541,926
122 4,541,927
177 4,541,928
217 4,541,929
344 4,541,930
728 4,541,931
750 4,541,932
780 4,541,933
787 4,541,934

CLASS 211

1.5 4,541,533
13 4,541,534
96 4,541,535

CLASS 215

252 4,541,536
274 4,541,537

CLASS 219

9.5 4,542,267
10.55 B 4,542,268
4,542,270
10.55 C 4,542,269
10.55 E 4,542,271
10.57 4,542,272
10.77 4,542,273
10.81 4,542,274
51 4,542,275
60 A 4,542,276
109 4,542,277
121 LV 4,542,278
124.34 4,542,279
137 WM 4,542,280
216 4,542,281
345 4,542,282
483 4,542,283
506 4,542,284
543 4,542,285

CLASS 220

3.8 4,541,538
20 4,541,539
4,541,540
4,541,541
306 4,541,542
316 4,541,543
374 4,541,544
431 4,541,545
456 4,541,546

CLASS 221

260 4,541,547

CLASS 222

48 4,541,548
143 4,541,549
402.22 4,541,550
456 4,541,551
501 4,541,552
591 4,541,553

CLASS 223

66 4,541,554

CLASS 224

41 4,541,555
196 4,541,556

CLASS 226

191 4,541,557

CLASS 227

1 4,541,558

CLASS 228

117 4,541,559

CLASS 229

27 4,541,560

CLASS 235

377 4,542,286
379 4,542,287
487 4,542,288

CLASS 236

10 4,541,561
12.12 4,541,562

CLASS 239

64 4,541,563
102 4,541,564
178 4,541,565
224 4,541,566
265.37 4,541,567
441 4,541,568
450 4,541,569
676 4,541,570

CLASS 241

28 4,541,571
31 4,541,572
36 4,541,573
57 4,541,574

CLASS 242

18 PW 4,541,576
35.5 A 4,541,577
4,541,578
55.2 4,541,582
56 A 4,541,583
56.2 4,541,579
66 4,541,585
107.4 D 4,541,580
129.5 4,541,586
158 R 4,541,584
197 4,541,587
198 4,541,581
199 4,541,588
200 4,541,589
703 4,541,575

CLASS 244

3.15 4,541,591
3.2 4,541,590
3.22 4,541,592
45 R 4,541,593
114 B 4,541,594
129.3 4,541,595

CLASS 248

125 4,541,596
167 4,541,597
221.4 4,541,598
222.2 4,541,599
239 4,541,600
516 4,541,601
544 4,541,602
679 4,541,603

CLASS 249

33 4,541,604
142 4,541,605

CLASS 250

201 4,542,289
213 VT 4,542,290
231 R 4,542,291
256 4,542,292
288 4,542,293
338 4,542,294
352 4,542,295
359.1 4,542,296
360.1 4,542,297
443.1 4,542,298
504 R 4,542,299

CLASS 251

1.3 4,541,606
63.4 4,541,607
77 4,541,608
129.03 4,541,609
129.21 4,541,610
228 4,541,611
308 4,541,612
326 4,541,613

CLASS 252

8.55 D 4,541,937
8.55 R 4,541,935
8.6 4,541,936
33 4,541,938
4,541,939
4,541,940
49.6 4,541,941
4,541,942
67 4,541,943
95 4,541,944
149 4,541,945
189 4,541,946
307 4,541,947
522 R 4,541,948
4,541,949
4,541,950
4,541,951

CLASS 254

10.5 4,541,614
134.3 FT 4,541,615

CLASS 260

112 B 4,541,953
112 R 4,541,952
239 BB 4,541,954
330.9 4,541,955
397.1 4,541,956
397.2 4,541,957
404.5 4,541,958
455 R 4,541,959
464 4,541,960
465 E 4,541,963
465 F 4,541,962
465 G 4,541,961
465.3 4,541,964
505 C 4,541,965

CLASS 261

27 4,541,966
95 4,541,967
109 4,541,968

CLASS 264

1.4 4,541,969
1.5 4,541,970
30 4,541,971
41 4,541,972
60 4,541,973
61 4,541,974
62 4,541,975
69 4,541,976
102 4,541,977
150 4,541,978
174 4,541,979
4,541,980
209.1 4,541,981
349 4,541,982
514 4,541,983

CLASS 266

48 4,541,616
65 4,541,617

CLASS 269

41 4,541,618
43 4,541,619
46 4,541,620
51 4,541,621
325 4,541,622

CLASS 271

10 4,541,623
12 4,541,624
42 4,541,625
236 4,541,626

CLASS 272

72 4,541,627
134 4,541,628

CLASS 273

72 R 4,541,629
144 B 4,541,630
170 4,541,631
201 4,541,632
238 4,541,633
271 4,541,634
284 4,541,635
416 4,541,636
426 4,541,637

CLASS 277

9 4,541,638
73 4,541,639
152 4,541,640
183 4,541,641

CLASS 280

3 4,541,642
11.21 4,541,643
43.1 4,541,644
154.5 R 4,541,646
234 4,541,647
281 R 4,541,648
4,541,649
299 4,541,650
433 4,541,651
672 4,541,652
711 4,541,653
801 4,541,654

CLASS 285

55 4,541,655
286 4,541,656
305 4,541,657
319 4,541,658
382.2 4,541,659

CLASS 289

2 4,541,660

CLASS 293

117 4,541,661

CLASS 294

82.1 4,541,662

CLASS 296

97 H 4,541,663
213 4,541,664
218 4,541,665

CLASS 297

16 4,541,666
64 4,541,667
201 4,541,668
284 4,541,669
4,541,670
330 4,541,671
367 4,541,672

CLASS 307

112 4,542,300
269 4,542,301
326 4,542,302
350 4,542,303
353 4,542,304
4,542,305
443 4,542,306
482 4,542,307
494 4,542,308
513 4,542,309
578 4,542,310

CLASS 308

3 R 4,541,673
6 C 4,541,674

CLASS 310

13 4,542,311
4,542,312
65 4,542,313
154 4,542,314
348 4,542,315

CLASS 312

257 R 4,541,675

CLASS 313

318 4,542,316
414 4,542,318
496 4,542,317
546 4,542,319

CLASS 315

15 4,542,320
111.81 4,542,321
366 4,542,322

CLASS 318

254 4,542,323
483 4,542,325
565 4,542,326
571 4,542,327
573 4,542,328
696 4,542,329
798 4,542,324

CLASS 322

46 4,542,512

CLASS 323

222 4,542,330
313 4,542,331
317 4,542,332

CLASS 324

52 4,542,333
61 R 4,542,334
66 4,542,335
77 B 4,542,336
110 4,542,337
117 R 4,542,338
121 R 4,542,339
158 F 4,542,341
158 R 4,542,340
207 4,542,342
307 4,542,343
326 4,542,344
451 4,542,345

CLASS 328

165 4,542,346

CLASS 329

124 4,542,347

CLASS 330

253 4,542,348
279 4,542,349
293 4,542,350

CLASS 331

11 4,542,351
96 4,542,352
143 4,542,353

CLASS 332

11 D 4,542,354

CLASS 333

24.2 4,542,357
191 4,542,355
195 4,542,356
246 4,542,358

CLASS 335

78 4,542,359
203 4,542,360
230 4,542,361

CLASS 336

60 4,542,362

CLASS 337

31 4,542,363
253 4,542,364

CLASS 338

20 4,542,365
196 4,542,366

CLASS 339

14 L 4,541,684
17 CF 4,541,676
17 F 4,541,677
75 MP 4,541,678
97 P 4,541,679
98 4,541,680
100 4,541,681
111 4,541,682
126 R 4,541,683

CLASS 340

347 AD 4,542,370
347 CC 4,542,368
347 DA 4,542,367
4,542,369
4,542,371
500 4,542,372
568 4,542,373
648 4,542,374
712 4,542,375
724 4,542,376
727 4,542,377
734 4,542,378
758 4,542,379
825.5 4,542,380

CLASS 343

5 CF 4,542,381
7.7 4,542,382
903 4,542,383

CLASS 346

33 R 4,542,384
75 4,542,385
76 L 4,542,388
76 PH 4,542,387
140 R 4,542,386
4,542,389
4,542,390
4,542,391
160 4,542,392
163 4,542,393
209 4,542,394
216 4,542,395

CLASS 350

96.21 4,541,685
96.23 4,541,686
162.12 4,541,687
171 4,541,688
255 4,541,689
333 4,541,690
335 4,541,691
339 F 4,541,693
339 R 4,541,692
371 4,541,694
429 4,541,695

CLASS 351

123 4,541,696
211 4,541,697

CLASS 354

82 4,541,698
227.1 4,541,699

286 4,541,700
324 4,541,701
400 4,541,702
415 4,541,703
432 4,541,704

CLASS 355

3 FU 4,541,705
4,541,707
4,541,708
3 R 4,541,706
3 TR 4,541,709
13 4,541,710
14 R 4,541,711
53 4,541,712
75 4,541,713
99 4,541,714

CLASS 356

237 4,541,715
4,541,716
244 4,541,717
316 4,541,718
343 4,541,719
345 4,541,720
375 4,541,721
376 4,541,722
4,541,723

CLASS 357

23.4 4,542,396
32 4,542,397
38 4,542,398
46 4,542,399
54 4,542,400
71 4,542,401

CLASS 358

30 4,542,402
41 4,542,403
106 4,542,404
111 4,542,405
120 4,542,407
141 4,542,406
167 4,542,408
212 4,542,409
228 4,542,410
260 4,542,411
4,542,412
261 4,542,413
285 4,542,414
342 4,542,415

CLASS 360

9.1 4,542,417
10.3 4,542,416
19.1 4,542,418
4,542,419
42 4,542,420
67 4,542,421
4,542,422
72.1 4,542,427
73 4,542,423
4,542,424
75 4,542,428
77 4,542,425
97 4,542,426
103 4,542,429
106 4,542,430
137 4,542,431

CLASS 361

44 4,542,432
92 4,542,433
111 4,542,440
231 4,542,434
283 4,542,435
4,542,436
386 4,542,437
403 4,542,438
405 4,542,439
412 4,542,441
413 4,542,442
415 4,542,443
433 4,542,444

CLASS 362

20 Re.31,987
96 4,542,445
122 4,542,446
183 4,542,447
268 4,542,448
330 4,542,449

CLASS 363

23 4,542,450
132 4,542,451

CLASS 364

141 4,542,452
200 4,542,453
4,542,454
4,542,455
4,542,456
4,542,457
4,542,458
414 4,542,459
424 4,542,460
4,542,461
4,542,462
4,542,463
457 4,542,464
468 4,542,465
473 4,542,466
474 4,542,467
481 4,542,468
483 4,542,469
485 4,542,470
513 4,542,471
556 4,542,472
560 4,542,473
724 4,542,475
749 4,542,476
900 4,542,477
4,542,478
4,542,479
4,542,480

CLASS 365

149 4,542,481
182 4,542,482
190 4,542,483
205 4,542,484
230 4,542,485
4,542,486

CLASS 366

290 4,541,724

CLASS 367

31 4,542,487
35 4,542,488
93 4,542,489

CLASS 368

37 4,541,725
80 4,541,726
232 4,541,727

CLASS 369

6 4,542,490
45 4,542,491
46 4,542,492
126 4,542,493
256 4,542,494
273 4,542,495

CLASS 370

16 4,542,496
60 4,542,497
4,542,498
85 4,542,499
4,542,501
88 4,542,502
100 4,542,503
4,542,504
102 4,542,500

CLASS 371

1 4,542,505
9 4,542,506
22 4,542,507
29 4,542,508
61 4,542,509

CLASS 372

2 4,542,510
46 4,542,511
86 4,542,529

CLASS 373

112 4,542,513

CLASS 374

29 4,541,728
31 4,541,729
43 4,541,730
117 4,541,731
4,541,732
149 4,541,733
169 4,541,734
188 4,541,735

CLASS 375

10 4,542,514
17 4,542,515
30 4,542,516
36 4,542,517

CLASS 376

415 4,541,984

CLASS 377

10 4,542,518

CLASS 378

19 4,542,519
58 4,542,520
155 4,542,521
167 4,542,522
4,542,523

CLASS 381

53 4,542,524
56 4,542,525

CLASS 382

13 4,542,526
52 4,542,527
62 4,542,528

CLASS 383

66 4,542,530

CLASS 384

406 4,541,737
465 4,541,736
470 4,541,738
4,541,739
473 4,541,740
482 4,541,741
518 4,541,742
576 4,541,743
607 4,541,744

CLASS 400

124 4,541,745
144.2 4,541,746
4,541,747
470 4,541,748
613.2 4,541,749

CLASS 404

110 4,541,750

CLASS 405

15 4,541,751
129 4,541,752
166 4,541,753
168 4,541,754
195 4,541,755

CLASS 407

45 4,541,756
53 4,541,757

CLASS 408

1 BD 4,541,758
76 4,541,759

CLASS 409

137 4,541,760

CLASS 411

34 4,541,761

CLASS 414

32 4,541,762
45 4,541,763
52 4,541,764
267 4,541,765
277 4,541,766
523 4,541,767
535 4,541,768
633 4,541,769
730 4,541,770
4,541,771

CLASS 415

90 4,541,772
111 4,541,773
115 4,541,774
180 4,541,775
200 4,541,776

CLASS 416

138 4,541,777
193 A 4,541,778

CLASS 417

62 4,541,779
176 4,541,780
211 4,541,781
244 4,541,782
404 4,541,783
407 4,541,784
4,541,785
4,541,786
417 4,541,787
471 4,541,788
498 4,541,789

CLASS 418

137 4,541,790
182 4,541,791

CLASS 419

10 4,541,985

CLASS 422

5 4,541,986
56 4,541,987
94 4,541,988
186.07 4,541,989
242 4,541,990
269 4,541,991
300 4,541,992

CLASS 423

27 4,541,993
150 4,541,994
213.5 4,541,995
4,541,996
219 4,541,997
226 4,541,998
235 4,541,999
244 4,542,000
311 4,542,001
331 4,542,002
340 4,542,003
342 4,542,004
347 4,542,005
365 4,542,006
450 4,542,007
477 4,542,008
561 R 4,542,009
579 4,542,010

CLASS 424

16 4,542,011
28 4,542,012
4,542,013
70 4,542,014
78 4,542,025
79 4,542,015
86 4,542,016
101 4,542,017
119 4,542,018
157 4,542,019

CLASS 425

143 4,541,792
206 4,541,793
290 4,541,794
437 4,541,795

CLASS 426

100 4,542,028
127 4,542,029
262 4,542,030
307 4,542,031
319 4,542,032
321 4,542,033
522 4,542,034
565 4,542,035
601 4,542,036

CLASS 427

53.1 4,542,037
68 4,542,038
149 4,542,039
196 4,542,040
212 4,542,041
213 4,542,043
213.36 4,542,042
215 4,542,044
236 4,542,045
298 4,542,046
374.4 4,542,047
380 4,542,048
388.1 4,542,049

CLASS 428

35 4,542,050
39 4,542,051
40 4,542,052
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	320	280,568
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	400	280,571
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		280,587
	354	280,588
	360	280,589
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	193	280,610
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	315	280,613
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	37	280,615
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	58	280,617
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DESIGN PATENTS

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41 : 5,559

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